

MERRITT RUHLEN

A GUIDE TO THE LANGUAGES OF THE WORLD

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PREFACE

The present work is divided into two parts. Part II contains information about 700 of the world's languages. Part I provides a general orientation to this material for both linguists and non-linguists.

For linguists a reading of section 1.6 of Chapter 1 and Chapter 2 is recommended. This will provide a brief explanation of how the data are arranged, and what they represent.

While certain linguistic symbols may at first appear foreboding to laymen, the data presented in this <u>Guide</u> are of such an elementary nature that even a person with no prior linguistic training can understand them with a minimum of explanation. Chapter 1 presents a few of the essentials about language and languages. Chapter 3 contains a detailed description of how speech sounds are produced, and Chapter 4 summarizes the symbols used to represent these sounds. Chapter 5 outlines the genetic classification of the world's languages, and gives a thumbnail sketch of each language family.

The bulk of Part II consists of information on 700 languages, arranged alphabetically by language name. Part II concludes with (1) a summary of the genetic classification of all the languages included in Part II, (2) maps showing the location of language families and (selected) languages, (3) tables summarizing the linguistic data, and (4) a bibliography.

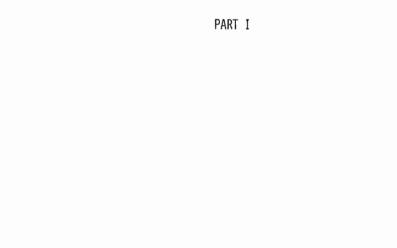
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1 FOR THE NON-LINGUIST

1.1 HOW MANY LANGUAGES ARE THERE?

One of the first things a layman is likely to ask a linguist about the languages of the world is: How many are there? It happens to be one of the questions which linguists like least to answer, as any answer will necessarily entail an oversimplification of the facts.

Nevertheless, I think most linguists today would agree that the number of distinct human languages spoken on the earth at the present time is probably on the order of 4,000 to 8,000. No precise figure is really possible for a number of reasons. First, for many languages there is today little, if any, documentation. While the languages of Europe have been studied and analysed for centuries, in other areas of the world (e.g. South America, New Guinea, Australia) the documentation and analysis of the indigenous languages has scarcely begun.

An even thornier problem, however, is that there are really no firm criteria for deciding whether one is dealing with two dialects of one language, or two different languages. In addition, non-linguistic factors, such as the social background, often play a role (or, at least, are felt by speakers to play a role) in determining the degree of mutual comprehension between two languages. For example, the language which is commonly referred to as 'Chinese' represents, in reality, a group of related languages (e.g. Mandarin, Cantonese, Hakka) which are as different from each other as one Romance language (e.g. Rumanian, Italian, French, Spanish, Portuguese) is from another. The reason that 'Chinese' is felt to be unitary is that all Chinese 'dialects' (i.e. languages) are written alike. Thus, any literate Chinese person knows that ** means*

'rice', though he would pronounce the symbol differently according to whether he spoke Mandarin, Cantonese, or one of the other Chinese dialects.

Ouite similarly, the language which is normally called 'Arabic' represents a number of related, but distinct, The Arabic spoken in Morocco, for example, is as different from Palestinian Arabic as Spanish is from French. Two independent, but related, factors play a role in the grouping of the various Arabic 'dialects' under the common term Arabic. First, Classical Arabic (from which the modern dialects derive) is used in Arab countries by educated people alongside the local Arabic dialect. Thus, to the extent that a Palestinian and a Moroccan both know Classical Arabic, they can communicate with each other in it (or in a 'semi-classical' form of their respective dialects). The situation in the modern Arab world, where Classical Arabic is widely used as a lingua franca by persons whose local varieties of Arabic do not permit mutual intelligibility, parallels the use of Classical Latin in the Middle Ages by educated people whose local dialects (e.g. Old French, Old Italian, Old Spanish) had ceased to be mutually comprehensible. A second factor favoring the use of the term Arabic to denote the different Arabic languages is the high degree of ethnic identity among Arabs, a feeling so strong that they are willing to overlook considerable linguistic differences.

Conversely, in other areas of the world what are clearly two dialects of the same language are referred to by different names. In Yugoslavia, for instance, Serbian is spoken in the southern part of the country, and Croatian in the north. Furthermore, Croatian is written with the Latin alphabet, while the Serbs, like the Russians, use Cyrillic characters. In spite of the different language names and different alphabets, a Serb and a Croat experience no more difficulty in conversing with each other than would a Texan and a Bostonian speaking their local varieties of English. The distinction between Serbian

and Croatian reflects, therefore, an historical (and contemporary social) division between the (Catholic) Croats and the (Orthodox) Serbs, rather than any fundamental <a href="https://linguistic.com/historical-linguistic.com/historical-linguistic.com/historical-linguistic.com/historical-linguistic.com/historical-linguistic.com/historical-linguistic in India and Pakistan. In north India Hindi is spoken by persons practicing the Hindu religion; in Pakistan, where the majority of people are Moslem, the chief language is Urdu. Despite the different names (and different orthographies) Hindi and Urdu are very similar, and are best considered as slightly different dialects of one language. In like manner, Malay (the national language of Malaysia) and Indonesian (the official language of Indonesia) are, from a linguistic point of view, simply two dialects of one language.

Finally, we must note that the question of mutual intelligibility, from a strictly linguistic point of view (i.e. ignoring such social factors as whether the people speaking different dialects want to communicate with each other), is not an all-or-nothing proposition. Mutual intelligibility among various varieties of American English is quite high, so high, in fact, that speakers of different dialects may feel that comprehension is 100%, completely overlooking minor differences. Intelligibility between American English and British English is also quite high, though not as high as that between different American dialects. An American may well be puzzled when an Englishman refers to the 'bonnet' of his car (i.e. hood), or tells him to take the lift (i.e. elevator) to the first (i.e. second) floor. Mutual comprehension between more divergent varieties of English may, on occasion, drop sharply. I can remember seeing a play once in Dublin where the English was so different from what I was used to hearing that I could not even follow the gist of the story.

Ignoring the serious problem of how one might measure the degree of mutual intelligibility, one may still ask what level of mutual comprehension would be required in order to classify two varieties of a language as being dialects of the

same language. 80%?...60%?...Since any number one might pick would be arbitrary, it is more realistic to simply accept the fact that mutual intelligibility among languages forms a continuum which ranges from 0% to 100%, and the question, therefore, of the number of distinct languages may receive only an approximate answer.

1.2 HOW ARE LANGUAGES DISTRIBUTED?

On a clear dark night there appear to be countless stars spread across the heavens, but actually the human eye, under ideal conditions, is only capable of distinguishing between 4,000 and 6,000 stars. Thus, assuming each star represents one language conveys some idea of the number of languages in the world.

However, whereas all the stars seem roughly comparable in intensity (to be sure, some are brighter than others, but these differences are relatively minor), languages differ radically in their relative 'prominence', if by prominence we mean the number of speakers. Of the earth's 3.7 billion inhabitants, more than two billion speak one of the ten most widely spoken languages:

- 1. Chinese
- 2. English
- 3. Russian
- 4. Spanish
- 5. Hindi-Urdu
- 6. Bengali
- 7. Arabic
- 8. Japanese
- 9. German
- 10.Portuguese

And over 90% of the world's population speaks one of the 'top-100'. Clearly, then, most languages are spoken by relatively few

people, and this situation is likely to become even more pronounced in the future.

For the past 500 years European colonialism has sought to impose its languages and customs on peoples around the world. Cultural diversity in general, and linguistic diversity in particular, have suffered irreparable damage, not to mention the peoples themselves. A single language, English, has all but eliminated the numerous, and diverse, native Indian languages of North America. In Central and South America the situation is only slightly different. Here Spanish (and in Brazil, Portuguese) has supplanted, or is in the process of supplanting, most of the indigenous languages. A few Indian languages (e.g. Guarani in Paraguay, Quechua in Peru, and Nahuatl in Mexico) are still widely spoken, but the vast majority appear doomed to extinction in the not too distant future. Similar conditions exist in Australia and other parts of the world.

1.3 ARE SOME LANGUAGES MORE PRIMITIVE THAN OTHERS?

The spread of the 'languages of civilization' (e.g. English, French, Spanish) at the expense of the so-called 'primitive' languages has fostered the belief that languages such as English and French are in some sense superior to (or more advanced than) the more obscure African, Indian, and Asian languages. It is important, therefore, for the layman to recognize that there is no basis for such a belief. Despite stories of primitive African languages consisting of only a few sounds and a handful of words, no such languages have ever been found.

From a linguistic point of view no language is more primitive than any other. Languages do, of course, differ, and people often attach a <u>social</u> significance to such differences (e.g. "French is a more beautiful language than German." "Bill speaks better English than John."), but such beliefs are rooted in the way people view languages, and not in the

languages themselves.

It is true, of course, that American Indian languages do not possess the vocabulary necessary to discuss baseball or computer technology, but this fact is merely a reflection of cultural differences, not linguistic inferiority. Some African and South American Indian languages possess an extraordinarily rich vocabulary for the description of local fauna, and the Eskimo language is reported to have twelve different words for various kinds of snow and ice. Other languages have specialized vocabulary in other areas.

There is, however, no language which does not allow its speakers to ask questions, make commands, negate statements, and the like. Nor is there any known language in which one cannot talk about past and future time, or real and imaginary events. In spite of superficial differences, all human languages are fundamentally alike in many respects. As we shall see in section 1.5 below, they are all structured in roughly the same way.

1.4 WHAT IS A LANGUAGE FAMILY?

A family of languages is a group of languages which are all descendants of a single earlier language. For example, 2,000 years ago Latin was the language spoken throughout the Roman Empire. With the fall of the empire around 500 A.D. the various regional dialects were isolated from each other. Over the course of the next 1,500 years these local dialects continued to change, as all languages do, until today we find that what were once merely regional variants of Latin have been transformed into the modern Romance languages. While the Latin word for 'to sing' was cantare, most of the modern Romance languages show a slightly different form:

 Latin
 cantare

 Rumanian
 cinta

 French
 chanter

 Spanish
 cantar

 Italian
 cantare

In Rumanian the first vowel evolved from <u>a</u> to <u>f</u>, and the final -<u>re</u> has disappeared. In French initial <u>c</u> became <u>ch</u>, and the second vowel changed from <u>a</u> to <u>e</u>. In both French and Spanish the final -<u>e</u> was lost. In Italian the word has not changed significantly.

What is important about this example is that the 'sound changes' which affected Latin cantare (and produced the various modern forms) did not affect only cantare, but rather they affected the entire vocabulary of the dialect in question. Latin a did not become Rumanian in just cinta; the Rumanian words lina 'wool' (from Latin lana), fintina 'fountain' (from Latin fontana), and a host of others all show the same evolution: a has become i before n. Linguists represent this sound change by means of the following notation:

(1)
$$a > 1 / n$$

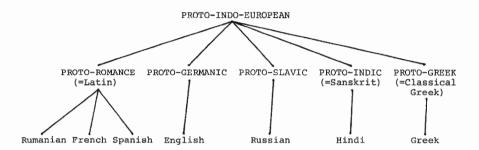
Similarly, in French the change of c to ch:

(2)
$$c > ch / a$$

has affected many other words in addition to chanter: changer 'to change' (from Latin cambiare), champ 'field' (from Latin campus), etc. One of the major discoveries of linguistics is the fact that sound changes of this type are regular. By regular I mean that sound changes like (1) and (2) apply to whole classes of forms, and not just to specific individual words. The regularity of sound change permits us to reconstruct earlier forms

of words where there is a total lack of documentation, even in cases where the languages involved have never been written. Instead of starting with a known Latin word and following the changes it underwent in arriving at its various modern forms, the process is reversed. Given a set of modern forms, which are partially similar in both sound and meaning, it is possible by working backwards to unravel the individual sound changes which have affected the various words, and to determine the word's original form, as it must have been pronounced before sound changes caused the unique earlier form to diverge into distinct variants in different geographic areas. An earlier reconstructed form is said to belong to a 'proto-language', and the later modern forms belong to the offspring of that proto-language. The proto-language of the modern Romance languages was, of course, Latin, so that in this case we have documentation to confirm our reconstructions. Usually this is not the case, and the forms of the reconstructed proto-language can be neither verified nor rejected by external criteria.

As it turns out, however, the Romance languages constitute just one branch of an even more comprehensive family of languages, all of which are descendants of a language linguists call Proto-Indo-European, or simply Indo-European. We may picture the descent of the modern Indo-European languages from Proto-Indo-European in terms of a family tree, where each branch represents one subgroup of the family:



The reconsruction of Proto-Indo-European ranks as one of the major achievements of linguistics. Although this language, spoken some 4,000 years ago, was never written down, linguists have been able to reconstruct many Proto-Indo-European words (and much else, in addition) on the basis of the modern Indo-European languages (and those now extinct but preserved in texts, such as Latin and Sanskrit).

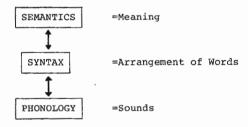
One might wonder whether it would not be possible to reconstruct, using a continually greater number of languages, 'Proto-Human', that is, the first language from which all others have evolved (assuming such a language ever existed). Such an enterprise is not, however, possible because reconstruction can only carry us back several thousand years, an extremely short time span in man's three to five million year history. best we can do at present is to trace the contemporary languages of the world back to approximately thirty proto-languages (cf. Chapter 5). While future groupings of some of these language families into even more inclusive families is to be expected (especially among the relatively numerous language families of North and South America), no such groupings are at the present time accepted by most linguists. Thus the question of whether all human languages ultimately derive from a single source is one which we cannot yet answer.

1.5 HOW IS LANGUAGE STRUCTURED?

One may think of a language as a set of rules which allows speakers to associate a meaning with a sequence of sounds (and vice versa):



That this association is <u>arbitrary</u> for human languages is obvious to anyone who has ever listened to a language with which he was unfamiliar. If you do not know Chinese, listening to the sounds made by someone speaking Chinese will provide no clue as to what meaning is associated with those particular sounds. The rules which link meaning and sound are of three basic types: <u>semantic</u>, <u>syntactic</u>, and <u>phonological</u>:



The <u>semantic</u> rules allow a person to construct meaningful units from more basic semantic features. For example, the English word <u>dog</u>, the French word <u>chien</u>, and German <u>Hund</u> all represent a combination of certain semantic properties which distinguish this animal from other animals and things found in the world, properties such as [+ concrete], [+ animate], [- human], [+ furry], [+ quadruped], etc. (A + indicates the word contains the semantic

feature; a -, that it does not.)

Given a set of meaningful elements it is the task of the <u>syntactic</u> rules to arrange these words (and phrases) in the proper order. If you are speaking English, this will mean that the subject (S) of a (simple declarative) sentence will normally precede the verb (V), which in turn usually precedes the direct object (O):

This order is not, however, universal. In Japanese the order of the elements would be:

$$\underbrace{\text{The man}}_{S} \underbrace{\text{the dog}}_{O} \underbrace{\text{saw.}}_{V}$$

and in Hawaiian yet another order prevails:

(5)
$$\underbrace{\text{Saw}}_{\mathbf{V}} \underbrace{\text{the man}}_{\mathbf{S}} \underbrace{\text{the dog}}_{\mathbf{O}}.$$

Similarly, the order of a noun (N) and its modifying adjective (A) may be either NA or AN. In English the latter order is normally used:

French, on the other hand, prefers the order NA:

In addition to specifying the order of these elements, syntactic

rules also change the order of words and phrases. For example, the simple declarative sentence:

(8) John is going to the store.

may be transformed into a question by a syntactic transformational rule which moves 'is' to the front of the sentence:

(9) Is John going to the store?

Some syntactic rules are optional; thus one can say either:

(10) I called up the doctor.

or:

(11) I called the doctor up.

Notice, however, that if the object of the verb is a <u>pronoun</u> (e.g. him, her, it, them), rather than a noun, the transformation is obligatory, and 'up' must be moved to the end of the sentence:

- (12) *I called up him.
- (13) I called him up.

The asterisk before sentence (12) is the sign used by linguists to indicate that a sentence is <u>non-grammatical</u>. Native speakers of English simply do not use this word order, even though such an order would probably be understood by anyone who knew English.

Linguists use the term non-grammatical to describe sentences which 'sound funny' to native speakers (such as (12) above). This is quite different from the term ungrammatical, which is often used by teachers to describe sentences which are

commonly used, but are not accepted by certain 'authorities'. To understand the difference between <u>linguistic</u> gramaticality, and gramaticality as normally understood by non-linguists, consider the following sentences:

- (14) Whom did you see at the store?
- (15) Who did you see at the store?
- (16) *Who at store the see you did?

From a linguistic point of view both (14) and (15) are grammatical, while (16) is not; no native speaker would ever say anything like (16). Yet many people have been taught in school that (14) is grammatical (i.e. 'correct'), while (15) is not. English instructors often spend a good deal of time teaching their students that 'who' is the subject pronoun and 'whom' the object pronoun. They do this in spite of the fact that the overwhelming majority of Americans would use only (15) in normal everyday conversation, reserving the use of (14), if it is used at all, for situations in which they felt a 'better' grade of English was called for. Linguists describe language as it is actually spoken, not as someone would like it to be spoken. Unlike the prescriptive rules of English teachers (Say this, not that!), linguistic rules are entirely descriptive; they simply describe language as it is normally spoken.

While the motives for teaching artificial rules of the 'who/whom' (or 'shall/will') variety are varied, the practical effect of such teaching is to perpetuate misconceptions about language. Furthermore, many people, especially those from the lower socio-economic classes, are made to feel uncomfortable with the way they talk. Whether at job interviews or on college entrance exams, a speaker of a non-standard dialect often encounters subtle forms of discrimination.

The final component of language is phonology, the study of the sounds of language. Since this is the only directly observable part of language, it is not surprising that far more attention has been focused on this area than on either semantics or syntax. In the past twenty years, first syntax, and more recently semantics, have received an ever increasing amount of attention from linguists; yet there is still no universal framework for the description of syntax or semantics which is anywhere near as detailed, or widely accepted, as that for phonology.

Let us now examine what a linguist means by a 'speech sound.' Any native speaker of English knows that the p in 'pie' and the p in 'spy' are the same sound. Linguists, however, know that these two sounds are quite different, the p in 'pie' being an aspirated p (i.e. pronounced with a puff of air, something like the sound of h), while the p in 'spy' is unaspirated (i.e. not accompanied by this puff of air). If you don't believe that these two p's are really different, hold a lighted match an inch or so in front of your lips and pronounce both words. The puff of air following the p in 'pie' will blow out the match, while the p in 'spy' (without the puff) will not. You are probably wondering at this point why sounds which are different sound alike. The reason is that the distribution of the aspirated and unaspirated p's in English is automatically determined by a phonetic rule which holds for all English words:

(17) p is unaspirated after s; in all other positions it is aspirated.

Linguists call the sounds of speech phonemes. The English \underline{p} phoneme, /p/, has two allophones, or variants, unaspirated [p] after \underline{s} , and aspirated $[p^h]$ elsewhere. (Slanted lines, //, are used to enclose phonemes; the small raised h indicates aspiration):

/p/ = [p] after \underline{s} $[p^h]$ elsewhere

The difference between an aspirated p and an unaspirated p is never associated with a difference in meaning in English. If you pronounce 'pie' with either sound, speakers of English will hear the same word. Because aspiration is automatically determined by rule (17), speakers of English are not sensitive to it. In languages such as Thai, Hindi, and Chinese, however, the difference between an aspirated p and an unaspirated p may distinguish two different words, just as the difference between p and b can distinguish words in English (e.g. 'pit' vs. 'bit'). In Thai, for example, the word for 'forest' is [paa], while the word for 'to split' is [phaa]. Thai speakers distinguish aspirated sounds from unaspirated sounds. It is precisely because aspiration can signal meaning differences in Thai, but not in English, that speakers of Thai are sensitive to it, while English speakers are not. This means that what we hear depends not only on how good our hearing is, but also on our native lanquage.

A final example: as noted above, the difference between \underline{p} and \underline{b} can distinguish words in English (cf.'pit' vs. 'bit'), and these two sounds therefore represent different phonemes. In many Australian languages, however, \underline{p} and \underline{b} are allophones of the same phoneme, with $[\underline{b}]$ occurring between vowels, and $[\underline{p}]$ elsewhere:

Such a language might have the words <u>pa</u> 'father' and <u>aba</u> 'sky', but speakers of the language would tell you that <u>p</u> in the first word, and <u>b</u> in the second word were the 'same sound.' Speakers of such a language do not hear the difference between [p] and [b], just as speakers of English do not hear the difference between [p] and [ph].

The sounds which are listed for each language in this <u>Guide</u> are not, however, simply phonemes. Rather they are the chief allophones (i.e. the 'elsewhere' allophone) of each phoneme. Under English, therefore, you will find <u>ph</u> listed, rather than simply <u>p</u>. While English speakers are not normally aware of the aspiration, anyone who wishes to pronounce English as native speakers pronounce it should normally try to use the aspirated allophone (except after <u>s</u>). If you pronounce an aspirated <u>p</u> everywhere you will be right most of the time; on the other hand, if you pronounce an unaspirated <u>p</u>, you will be mispronouncing the sound, except when it occurs after <u>s</u>.

1.6 HOW DOES ONE INTERPRET THE LINGUISTIC DATA?

If you have followed the preceding discussion, you should now be able to interpret most of the linguistic information given for the languages in Part II. (You will, of course, have to refer to Chapters 3 and 4 to determine exactly what sound a certain symbol stands for.) For example, take a look at the information given for Rumanian:

```
c w g į
                                                 (C) (C) (C) V(C) (C) (C)
 d
                 е
                     ə
                         0
                                                 phonemic stress
 t <sup>s</sup>
                     а
     č
                                                 SVO/NA
      ſ
          h
 S
 7
 n
 1
 ſ
[1]
```

Following the name of the language, RUMANIAN, four types of information are given:

- (1) the name of the dialect, if any;
- (2) the source of the phonetic information; the full bibliographic citation is given in the bibliography;
- (3) the genetic classification, i.e. the language family, branch, sub-branch, etc.
- (4) the <u>place</u> where the language is spoken, and the approximate number of speakers;

Underneath these data the <u>consonants</u>, <u>vowels</u>, and <u>glides</u> are listed. Those sounds which are marginal in a language because they occur only in loanwords, interjections, or else very infrequently, are enclosed in brackets, []. Finally, in the right-hand corner or below the other data, there are various markers indicating:

- (5) the possible syllable types in the language;
- (6) the position of stress in the word;
- (7) the order of the S(ubject), V(erb), O(bject, and the N(oun) and A(djective);
- (8) the tones, if any;
- (9) vowel harmony (VH) is indicated, if present. (Vowel harmony means that there are restrictions against certain vowels appearing together in the same word.)

In the case of Rumanian we see that (1) it is the Daco-Rumanian dialect which is being described; (2) the phonetic information comes from Ruhlen, 1973; (3) this language is a member of the Eastern Romance sub-branch of the Italic branch of the Indo-European family; (4) it is spoken in Rumania by twenty million people; (5) it uses 21 consonants (one marginally), 7 vowels, and 4 glides, which are arranged according to certain phonetic parameters; (6) a syllable consists of anywhere from none to three consonants, followed by an obligatory vowel, followed by from none to three consonants; (7) stress is phonemic

within the word, i.e. there is no rule specifying which syllable is stressed in any given word; (8) the order of the subject, verb and object is SVO; that of a noun and adjective is NA. You should now have little trouble in deciphering the corresponding information for any other language.

1.7 HOW CAN ONE USE THESE DATA?

For the person who is looking for some specific fact about a particular language, and who finds it in this <u>Guide</u>, no further justification for the information collected here is necessary. However, there are other ways in which this work may be useful to laymen. One of the most obvious is in learning a foreign language.

For a wide variety of reasons many people find it necessary to learn a foreign language. While this manual is not primarily intended for use in foreign language instruction, it can nevertheless be used to pinpoint problems which are likely to cause difficulty for someone beginning the study of a foreign language. In this section I will briefly sketch how the Guide may be used toward this end.

Babies and young children are, as it were, programmed to learn language. They do so effortlessly, and with amazing alacrity. For adults, however, the acquisition of a foreign language is an entirely different matter. Once past the age of ten or so, the child's innate propensity for acquiring whatever language is spoken around him begins to fade away. While some people retain a considerable talent for learning foreign languages all their life, many others find the task increasingly difficult. One of the major problems derives from 'interference' caused by the language the adult has already learned, his 'native language.' Therefore, in approaching a foreign language an adult must take into account not only the structure of the language he wishes to learn, but just as importantly the structure of his own language, since there is always a tendency for adults to impose the sounds, word order, etc. of their native language on the language to be learned.

To make the discussion more concrete we will consider a specific example. Let's assume your native language is English and you are interested in learning French. How can this Guide be used in such an endeavor? The first thing to do is to look up the data on English and French and to compare them. sounds which are likely to cause you trouble are those which are found in French, but not in English. For example, the French r-sound [R] is a uvular trill, while the English r-sound [4] is a retroflex approximant. Once this difference is recognized, you can consult Chapter 3 to find out exactly what a uvular trill is, and how it is pronounced. A word of warning is in order at this point. It is unfortunately the case that simply knowing how a particular sound is made does not necessarily mean you will be able to reproduce it correctly. In this respect learning a foreign language is similar to learning how to play the piano, or how to play tennis. Simply knowing the mechanics involved does not guarantee your success in translating that knowledge into performance. Knowledge of the mechanics is only the first step; the successful implementation of this knowledge requires practice, both in tennis and foreign language acquisition.

Another sound which French has, but English does not, is the palatal nasal consonant [n], similar to the ny of English 'canyon.' The French vowel system provides a number of problems for the speaker of English, as French has both front rounded vowels and nasal vowels, while English has neither. (Consultation of Chapter 3 will again provide a description of how these sounds are produced.) Another difference which we notice is that in French the final syllable of a word receives the loudest stress, whereas in English the position of stress within a word is not predictable by any simple rule. Finally, we observe that in French the adjective usually follows the noun, while English prefers putting the adjective in front of the noun. All of these differences alert the learner to sources of potential problems. At the same time, however, comparison of the two languages shows in what ways the languages are similar, and

such similarities may also be exploited in learning a language.

The method of identifying problem areas is the same regardless of what one's native language is, or what the target language may be. First, look up your own language to see what sounds, word order, etc. it uses. Secondly, look up the language you are planning to learn, and locate the differences between the two languages. Thirdly, by consulting Chapter 3, you will be able to determine how the various new (to you) sounds are made, and (hopefully with the help of a competent teacher) you may begin the mastery of the new language. Finally, if you have access to a well-stocked library, the bibliographic reference given for each language will in many cases lead you to a complete description of the language you are interested in learning.

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2 FOR THE LINGUIST

In compiling the information for this <u>Guide</u> my aim has been to bring together, in one place, a large body of reasonably accurate data from as large a number of languages as possible. Most of these data are of such an elementary nature that, for a linguist, no explanation of them is really required. Nevertheless, I think a few brief comments are in order.

2.1 SOURCES

The source cited for each language is the source of the phonetic segments, but is not necessarily the source of the other data. For the genetic classification of the languages I have in most cases followed Voegelin & Voegelin's Index of the World's Languages (1973), though on occasion I have introduced minor differences. This work proved invaluable, both for the genetic classification and for information on where, and by how many people, certain languages are spoken. In addition to the Index, I have consulted various almanacs and encyclopedias for this latter information. The Index was also extremely helpful in identifying variant spellings of the same language; in most cases I have adopted the spelling preferred by Voegelin & Voegelin.

Information concerning syllable structure, stress, tones, vowel harmony, and word order has sometimes been taken from the same source as that for the phonetic information, though quite often one or more of these bits of information was obtained elsewhere, usually in other linguistic articles and books. Any attempt to identify every piece of information with a precise source would have proven exceedingly cumbersome, and it was my feeling that such an effort would not be

worthwhile.

In choosing a source for a language I tried to use a reasonably detailed phonetic description, though the quality of these descriptions, I found, varies greatly. For the better known languages one has the choice of many excellent sources, all of which give roughly comparable data. For other languages one is often forced to choose the 'least bad' of several descriptions, none of which are entirely satisfactory for reasons discussed in section 2.2 below. Finally, there are many languages for which I was only able to find a single description. In such cases one is forced to accept whatever data is given, or, if those data are clearly worthless, to exclude that language.

2.2 PROBLEMS OF INTERPRETATION

The fundamental problem in bringing together a large body of data lies in reconciling phonological descriptions which differ drastically in both theoretical bias and 'depth' of description. I have used sources written by pre-structuralists, structuralists, generativists, tagmemicists, and laymen with no pretension to any theoretical school. The phonetic 'depth' of description ranged from lists of letters (with, perhaps, a few terse comments such as "like ch in 'church'") to detailed phonetic/phonemic descriptions by highly qualified linguists.

In choosing the segments to be listed for each language I was faced with several problems. The first was to decide what segments should be represented: classical phonemes, systematic phonemes, morphophonemes, or phones? Here I was immediately constrained by the information presently available in the literature; it would not be possible, therefore, to give the systematic phonemes for a large number of languages since only a few such descriptions now exist. By and large the overwhelming majority of phonological descriptions are 'phonemic' in nature, with more or less allophonic detail. That is, they represent the surface contrasts in the language, not taking into

account more abstract grammatical relationships.

However, I have chosen not to list simply phonemes, but rather the 'elsewhere allophone' of each phoneme. adopted this approach for two reasons. The first is that I did not wish to arbitrarily exclude low-level phonetic detail as a subject of cross-linguistic investigation. Such phonetic detail (both in the form of allophonic variation within a single langauge, and fine phonetic differences between lanquages) has suffered at the hands of both structuralists and transformationalists. The former often had an aversion for specifying non-contrastive features, preferring not to mention whether an apical stop is dental or alveolar since such a specification is non-phonemic. Transformationalists, as has been pointed out elsewhere, have concentrated their attention on more abstract phonological relationships, by and large ignoring the low-level phonetic 'detail rules' which lie on the other side of where the phonemic level would be, if it existed.

My second reason for using the 'elsewhere allophone' as the basic segment is that such a unit is more useful to a layman than is the phoneme. For example, an American learning French would be led to believe by the phonemes of the two languages that English \underline{t} and French \underline{t} are the same sound. The respective elsewhere allophones, however, reveal that the French \underline{t} is dental and unaspirated, while the English \underline{t} is alveolar and aspirated. Certainly such facts are of interest to anyone desiring to speak French as natively as possible.

The elsewhere allophones, though representing the surface contrasts of a language, are in two respects more similar to the systematic phonemes of generative grammar than to classical phonemes. Both systematic phonemes and elsewhere allophones are <u>fully specified</u> for all features, and are <u>universally defined</u>. Classical phonemes, on the other hand, are only partially specified and are defined in terms of individual languages.

Furthermore, we might observe that the set of elsewhere allophones bears an even greater resemblance to the set of systematic phonemes if we do not permit a priori methodological arguments as a justification for underlying phonological contrasts. The early generative literature is full of arguments of the following type: (1) French has nasal vowels which alternate morphophonemically with oral vowels + nasal consonant. (2) In such cases it is more economical to derive nasal vowels which alternate from sequences of underlying oral vowel + nasal consonant. (3) Since we now have a rule which masalizes vowels which alternate morphophonemically, it would be more 'economical' to eliminate nasal vowels completely from underlying representations, deriving all nasal vowels, both alternating and non-alternating, from sequences of oral vowel + nasal consonant. One can find variations of this argument applied to glottalized consonants, affricates, diphthongs, and other 'complex' segments.

Kiparsky's Alternation Condition, however, effectively puts an end to such argumentation, requiring language internal motivation for phonological segments more abstract than those appearing on the surface. Except, then, for cases of 'Absolute Neutralization', the set of elsewhere allophones and the set of systematic phonemes bear a striking resemblance to each other. One should not forget, nevertheless, that simply because the sets of contrasting segments are similar, a systematic phonemic representation of a form is not necessarily the same as the elsewhere allophone representation. In Rumanian, for example, systematic phonemic /kresk+e/ becomes phonetic [kre]te] 'it grows' by general phonological rules. My point is simply that s, k, [, and t are systematic phonemes in Rumanian, as well as elsewhere allophones.

Having chosen the elsewhere allophone as the basic segmental unit to be represented, I encountered a further problem. The phonemic analyses which I used differed greatly both in content and style. It was therefore necessary to devise

a universal framework which was flexible enough to be used even in cases where phonetic detail is underspecified. Let us consider an example. One grammar may refer to some sound simply as t; another talks of 'apical t'; a third, dental t; and yet a fourth, alveolar t. In addition, all of these phones may or may not be aspirated. Since we wish to retain as much phonetic detail as possible, we must choose a phonetic grid which is capable of representing all of these differences. Let us therefore assume that we have symbols available for distinguishing dental, alveolar, and aspirated and unaspirated t's:

- [t] =alveolar unaspirated
- [t] =dental unaspirated
- [th] =alveolar aspirated
- $[\underline{t}^h]$ =dental aspirated

How does one represent a sound which is described simply as <u>t</u>, or 'apical <u>t</u>'? What I have done in such cases is to allow one of the values of a feature to represent the 'unmarked' value, and I have then used this unmarked value when insufficient phonetic detail makes a principled choice among feature values impossible. In the example just discussed I have chosen 'unaspirated' and 'alveolar' as the unmarked values. 'Marked' feature values are indicated then only where the source makes explicit reference to them.

Such an approach leads, of course, to a preponderance of unmarked segments which distorts the true distribution of marked and unmarked feature values. Linguists should bear this in mind.

Listed below are the major markedness assumptions I have followed in transcribing segments:

 Segments are assumed not to have any secondary articulation (e.g. palatalization, labialization, velarization).

- 2. Segments are assumed to be unaspirated.
- A labial segment is bilabial if it is a stop or nasal, labio-dental if it is a fricative.
- Apical stops, affricates, nasals, laterals, and vibrants are alveolar.
- The unmarked lateral is 'clear' (i.e. non-velarized) and voiced.
- The unmarked vibrant (i.e. r-sound) is an alveolar trill.
- 7. Nasals, laterals, vibrants, and glides are voiced.
- 8. Vowels are voiced, oral, and non-long.
- Front and central vowels are unrounded; back vowels, rounded.
- 10. a is low and central.
- 11. The domain of a tone is the syllable.

Many linguists will no doubt regret my decision not to include other data, such as a list of diphthongs and triphthongs. For some languages this omission leads to a serious distortion of the phonology of the language. Other linguists will think of other types of data which could easily have been included. Hopefully, future editions of this <u>Guide</u> will contain information which could not be incorporated into the present work.

2.3 SYMMETRY

A further consequence of the elsewhere allophone approach is the elimination of a priori symmetry from the segmental relationships. For example, let us assume there is a language with five short vowels and five long vowels, the elsewhere allophones of each being those shown below:

Frequently in the literature such long and short pairs are

represented simply as:

and there may, or may not, be a comment to the effect that /i/ is 'realized' as $[\iota]$, /e/ as $[\epsilon]$, /a/ as $[\bullet]$, etc. Where the source reflects differential patterning between long and short vowels (or oral and nasal vowels) that information is automatically retained by the use of elsewhere allophones.

Nevertheless, we must recognize that a priori symmetry considerations, in conjunction with orthographic convenience (i.e. the use of \underline{e} for \underline{e} , \underline{o} for \underline{o} , \underline{f} for $\underline{\Phi}$, etc.), have exerted a profound influence on the literature. Even for a language as well known as French, only rarely do we find the nasal vowels transcribed with phonetic accuracy:

õ ã õ.

More often than not symmetry considerations, orthograhic necessity, or the fact that these segments alternate morphophonemically with oral vowels of a different position, have led to their representation as:

or sometimes:

It is clear to me that much of the symmetry reflected in the literature is spurious, and wherever possible I have sought to eliminate it.

2.4 THE PHONOLOGY ARCHIVE

A team of linguists at Stanford and the University of California, Berkeley, is currently developing an archive of phonological data based on a sample of 200 of the world's languages. Phonological information which is far more detailed, and highly structured, than the rudimentary data found in this <u>Guide</u> is being stored in a computer. The contents of the archive are "meant to serve linguists interested in locating evidence to support or refute cross-linguistic claims concerning general phonetics, phonemic systems, types of phonotactic constraints, and phonological processes." (from the <u>Phonology Archive Coding Manual</u>) Linguists interested in obtaining general information on the archive, or who have specific requests for data, should write to:

Stanford Phonology Archive Department of Linguistics Stanford University Stanford, California 94305

2.5 conclusion

I am well aware that this <u>Guide</u> is both incomplete and inaccurate in many respects. In part, such inaccuracy and incompleteness reflects the state of linguistic literature in 1976, though it has surely been compounded by my own errors in interpreting other linguists' work, as well as my inability in locating the best available sources. It is my hope, however, that other linguists will bring such errors as exist to my attention, and will suggest more reliable sources, so that future editions of this <u>Guide</u> will be both more accurate and more complete—and consequently of greater value to laymen and linguists alike.

3 THE PHYSIOLOGY OF SPEECH

In English the same speech sound (i.e. phoneme, cf. section 1.5) may be written in two or more different ways. For example, the sound [f] is written f in 'full', gh in 'tough', and ph in 'philosophy.' On the other hand, there are cases of different speech sounds written in the same way: th is pronounced differently in 'ether' and 'either.' It is clear that if we wish to compare the sounds of different languages, we must adopt the principle that the same sound must be represented in the same way, regardless of the particular language in which it is found. Furthermore, since the number of distinct sounds in any given language, while limited, usually exceeds the number of letters in the Latin alphabet, it is necessary to invent distinct symbols for each distinct speech sound. A number of different linguistic alphabets have been devised for this purpose, and the one we will outline here is probably the most widely used of them all. It is, with a few modifications, the alphabet of the International Phonetic Association (IPA).

Speech sounds are produced by modifying a stream of air which is being forced up from the lungs and expelled through either the <u>oral cavity</u> (i.e. mouth), the <u>nasal cavity</u> (i.e. nose), or both. Figure 1 on the following page shows the various 'speech organs' which are used to produce different speech sounds. The following exposition will be clearer if you continually refer back to this diagram.

3.1 SYLLABLES

There are three basic kinds of speech sounds:

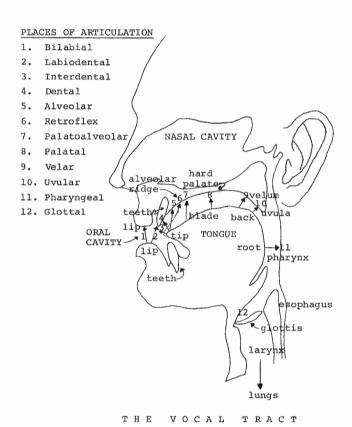


Figure 1

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CONSONANTS (e.g. p,g,f,z,m,l,r)

VOWELS (e.g. i,a,u)

GLIDES (e.g. y as in 'yes'; w as in 'we')
```

consonants are sounds produced by the momentary stoppage, or at least obstruction, of the escaping air. Vowels are sounds produced by modifying the configuration of the tongue in the mouth, without, however, allowing any part of the tongue to approach the roof of the mouth so closely that friction (as in s) results. Glides (which are also called semi-vowels or semi-consonants) resemble both vowels and consonants. They resemble vowels in that there is no obstruction of the escaping airstream; yet they are like consonants in being unable to stand alone. You can pronounce the vowel [i] or [u] all by itself, but both consonants (e.g. p,f) and glides (e.g. w) require either a preceding or following vowel for their production. Linguists say that vowels are syllabic, while glides and consonants are non-syllabic.

All syllables contain (with a few exceptions to be dealt with below) an <u>obligatory</u> vowel (V), preceded and/or followed by various consonants (C), the number and kinds of consonants depending on the specific language. Syllables ending in a vowel (e.g. CV) are called 'open'; those ending in a consonant (e.g. CVC) are 'closed.' The following are some possible syllable types in English (a single dot · separates syllables):

English Word	Phonetic Transcription	Syllable Canon
oh!	[0]	V
toe	[to]	CV
Tom	[tam]	CVC
stop	[stap]	CCVC
start	[stait]	CCVCC
starts	[staits]	CCVCCC
lazy	$[le \cdot zi]$	$CV \cdot CV$
alligator	[rev.eb.el.æ]	V · CV • CV · CVC

3.2 CONSONANTS

PLACE OF ARTICULATION

In producing consonants the obstruction of the airstream may be made at a number of different points along the
vocal tract. Figure 1 lists twelve such 'places of articulation.'
For example, if both the upper and lower lips are brought together, momentarily cutting off the escaping air, the sound
[p] will result. Such a sound is called a bilabial stop. If
the tip of the tongue is brought against the alveolar ridge,
an alveolar stop [t] is produced. If the back of the tongue
is raised so that the airstream is cut off at the velum, the
velar stop [k] results.

The number of different places of articulation for stops varies from language to language. While some languages use as few as two, others use five and six. The 'normal' number is three or four.

Some languages use two places of articulation simultaneously. Many African languages, for example, have <u>labial-velar</u> stops ([\Re p],[\Re p]), where closures at the lips and velum are released simultaneously.

THE GLOTTIS

As the lungs push the air up the larynx (cf. figure 1), and out through the mouth (or nose), the airstream must pass through the glottis, where the vocal cords are located. If the vocal cords are at rest the airstream will pass through the glottis unimpeded; sounds produced in this manner are said to be voiceless. [p], [t], and [k] are voiceless stops. The vocal cords may, however, be brought loosely together so that the escaping air causes them to vibrate; such vibration is called voicing, and sounds produced with it are voiced. (To hear the vibration of your vocal cords--i.e. voicing--cover your ears with your hands and hum: mmmmmm...) [b], [d], [g] are voiced stops. The only difference, then, between [p] and [b] is that

for the former the vocal cords are at rest, whereas for the latter they are vibrating.

Voicelessness and voicing are, in reality, just two points on a continuum, though they are very important points because all human languages use both voiceless and voiced sounds. Other points on this continuum are shown below:

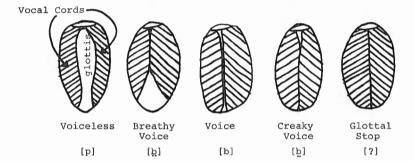
Voiceless
Breathy Voice
Voice
Creaky Voice
Glottal Stop

If the vocal cords are held tightly together, as when you hold your breath, the airstream will be stopped at the glottis. The sound which results at the release of this closure is called a glottal stop. While this sound plays only a marginal role in English, it is a very common sound in many of the world's languages. Some New Yorkers use a glottal stop [?] in place of to in 'bottle', and most English speakers produce a glottal stop in pronouncing 'uh uh' or 'oh oh.'

<u>Creaky voice</u> results when the vocal cords are held together more tightly than for ordinary voicing, but not so tightly that a complete stoppage (i.e. glottal stop) of the airstream results.

Breathy voice occurs when the vocal cords are held together less tightly than is the case for normal voicing, but not so loosely as to produce a state of voicelessness. Breathy voiced sounds are common in the languages of India.

The figures below show the position of the vocal cords during the five states of the glottis we have been discussing:



MANNER OF ARTICULATION

In addition to <u>stops</u>, there are five other kinds of consonants which occur frequently in the languages of the world:

Stops
Fricatives
Affricates
Nasals
Laterals
Vibrants

Fricatives

As was mentioned above, not all consonants involve a complete stoppage of the airstream; for many consonants there is only a partial obstruction of the airstream, with local turbulence or friction at the point of obstruction. Such sounds are called <u>fricatives</u>, and may occur at any of the twelve places of articulation listed in Figure 1. In pronouncing English [f], as in 'fool', the lower lip is drawn against the upper teeth and the airstream is then forced through these two 'articulators.' Such a sound is called a voiceless labiodental fricative. English [z], as in 'zoo', is a voiced alveolar fricative, and the symbol [ʃ] represents a voiceless palato-alveolar fricative (the sound written sh in 'shoe'). Many languages, but not

English, have a voiceless velar fricative [x]; this sound is written ch in German (e.g. Bach). [h], as in 'he', is a voiceless glottal fricative.

Most languages have fricatives at several different places of articulation, and a few languages use as many as seven. Some Australian languages, however, do not have fricatives (or affricates) as distinctive sounds.

Affricates

An <u>affricate</u> is a sound which begins as a stop and ends as a fricative. The sound written <u>ch</u> in '<u>choose</u>' is a voiceless palatoalveolar affricate, and is represented in phonetic transcription as [č]. The two components of this sound are the voiceless stop [t] and the voiceless fricative [], as you can see by pronouncing, without a pause between the words, the following:

- 1. Why choose? = [waj čuz]
- 2. White shoes = [wajt [uz]

Pronounced rapidly enough the [č] of (1) and the [t]] of (2) will be indistinguishable. The voiced partner of [č] is [š]; this sound is written j in 'jury' and dg in 'judge'. German has a voiceless bilabial affricate [pf] in Pferd 'horse', and Russian has a voiceless alveolar affricate [t] in tsar 'czar.' English uses neither of these sounds. An affricate, then, is much like a stop, except that it has a 'fricative release.'

In certain areas of the world affricates occur which have a <u>lateral</u> (see below) release rather than a fricative release. The lateral affricate $[t^1]$ is common among North American Indian languages, and the velar affricate $[g^1]$ is reported for a few Oceanic languages.

Affricates seldom occur at more than one or two places of articulation (usually palatal or alveolar, less often labial or velar). Some languages (e.g. French) have none.

Nasals

In pronouncing stops, fricatives, and affricates the velum (cf. figure 1) is drawn back, closing off the entrance to the nasal cavity. All of the exhaled air therefore passes through the oral cavity. In producing <u>nasal</u> consonants, such as \underline{m} and \underline{n} , the velum remains at rest, so that air passes out through both the oral and nasal cavities.

In other words, the only difference between [m] and [b], or [n] and [d], is that for the former member of each pair (i.e. \underline{m} , \underline{n}) air escapes through both the nose and mouth, while for the latter members (i.e. \underline{b} , \underline{d}) the nasal cavity is closed off, and the air escapes only through the mouth.

Typically nasal consonants are voiced stops. A few languages have nasal(ized) fricatives, affricates, laterals, and vibrants as distinctive speech sounds, but linguists normally reserve the term 'nasals' for the nasal stops, such as m and n.

We mentioned in section 3.1 above that consonants are non-syllabic; that is, they, unlike vowels, cannot themselves form a complete syllable. While this is by and large true, on occasion nasals, laterals, and vibrants (all of which, we might note, are usually voiced, like vowels) may be syllabic. The final -n of 'button' is often a syllabic nasal [n] in the speech of many Americans, but this sound is merely an allophone of the (non-syllabic) /n/ phoneme. In a few languages syllabic nasals contrast with non-syllabic nasals.

Nasal stops do not occur at all twelve places of articulation. Uvular nasals are extremely rare, and labiodental, pharyngeal, and glottal nasals are almost non-existent as distinctive speech sounds. On the other hand, bilabial \underline{m} and dental/alveolar \underline{n} are practically universal, and palatal \underline{n} and velar \underline{n} are quite common.

Laterals

The last two groups of consonants to be considered, laterals and vibrants, are sometimes referred to jointly as liquids. Like nasals, liquids are normally voiced, though

voiceless laterals are not uncommon. In Welsh what is written ll in 'Lloyd' is a voiceless lateral. Unlike stops, fricatives, and nasals, which are found at a number of different places of articulation in the same language, liquids seldom use more than one or two, with three probably the maximum allowed. Indeed, many languages use only a single point of articulation.

Laterals resemble fricatives, rather than stops, affricates, or nasals, in that there is never a complete blockage of the airstream during their production. Unlike fricatives, however, the tip of the tongue is pressed against the roof of the mouth, and air is allowed to escape at the sides of the tongue, i.e. laterally. To see that this is indeed the case, put your tongue in the position to pronounce [s] as in 'see', and inhale. You should feel air rushing in over the tip and central part of the tongue. Now position your tongue as if you were going to pronounce an 1, and inhale. This time you should feel air rushing into your mouth not at the center, but at the sides of your tongue.

Because of physiological restrictions, laterals do not occur at the bilabial, labiodental, pharyngeal, or glottal points of articulation, and velar and uvular laterals are themselves rare or non-existent.

Vibrants

While stops, fricatives, affricates, nasals and laterals all have one property which separates them from the other classes of speech sounds, vibrants do not. Though we may think of vibrants as being 'r-like' sounds, the actual production of the various vibrants involves quite different articulatory movements.

The most common type of vibrant, a <u>trill</u> [r], is produced by bringing the tongue close enough to the roof of the mouth so that the escaping air causes the tongue to vibrate against the roof of the mouth. An alveolar trill, written rr, occurs in Spanish perro 'dog.' Trills are made in

the dental-alveolar and velar-uvular regions, but seldom elsewhere. The Parisian French r is a uvular trill.

Another common type of \underline{r} -sound is the $\underline{flap}\ \underline{r}$. The \underline{r} in Spanish \underline{pero} 'but' is an alveolar flap. To produce a flap $\underline{r}\ [c]$ the tip of the tongue flaps against the roof of the mouth one time only. A flap is thus similar to a trill, except that for flaps there is a single vibration, whereas for trills there may be as many as five or six distinct flaps in rapid succession. Most Americans use an alveolar flap as the final consonant in 'pretty.' If you compare the \underline{t} 's of 'pretty' and 'to' you will see that they are quite different from each other.

The normal American English <u>r</u>, however, is neither a trill nor a flap; it is a <u>retroflex approximant</u> [4]. Retroflex means that the tip of the tongue is curled back toward the post-alveolar position (cf. Figure 1). The term <u>approximant</u> indicates that the tongue does not approach the roof of the mouth so closely that friction is produced. Approximants may be thought of as 'frictionless fricatives'; that is, were the tongue raised any higher in the mouth an approximant would turn into a fricative. We may think of an approximant, therefore, as representing a point on the following scale:

Stop: Complete closure
Affricate: Closure/friction

Fricative: Friction
Approximant: No friction

Were it not for the fact that the term approximant cuts across several of the six categories of consonants (i.e. fricatives, laterals, vibrants, and glides), we might consider them as a seventh category of consonants. While \underline{h} is usually referred to as a fricative, it is more accurately described as a glottal approximant. If you pronounce 'he' and 'she' you will see that the friction of the \underline{sh} [$\underline{\ }$] in ' \underline{she} ' is far more pronounced than that of the h in 'he.'

Many languages have a velar or uvular approximant; the French uvular trill may at times fade into a uvular approximant. Zulu has both a lateral approximant (the normal type of lateral) and a lateral fricative. While the American English \underline{r} is a vibrant approximant, the Czech \underline{r} is a vibrant fricative.

NON-PULMONIC CONSONANTS

All of the sounds described up to this point are produced with an egressive pulmonic airstream; that is, the lungs expel a stream of air which is modified by the organs of speech. While most speech sounds are produced in this manner, three other kinds of airstreams are used in human language:

Egressive Pulmonic: Stops, Fricatives, Nasals, etc. Egressive Glottalic: Ejectives Ingressive Glottalic: Implosives Ingressive Velaric: Clicks

Ejectives

An egressive glottalic airstream is produced by closing, and then raising, the glottis (i.e. the vocal cords are drawn tightly together as in the production of a glottal stop, and then the closed glottis itself is raised). Sounds produced with such an airstream are called ejectives. For example, an ejective p [p²] involves the following articulatory movements:

- 1. The lips are brought together as for an ordinary p.
- 2. The glottis is tightly closed.
- 3. The glottis, remaining closed, is raised.
- 4. The raising of the glottis, like the contraction of the lungs, causes the air pressure in the mouth to become greater than the air pressure outside the mouth.

- The lips are opened, and the pressurized air in the mouth rushes out producing a p sound.
- 6. The vocal cords relax, and the glottis is reopened.

Ejectives often produce two successive 'pops', the first when the constriction in the oral cavity is released, the second when the glottis itself is opened.

Ejectives occur at the bilabial, dental-alveolar, palatal, and velar-uvular points of articulation, though the velar variety is the most common. They are almost always voiceless.

Implosives

Implosives and ejectives together are often referred to as 'glottalized' or 'laryngealized' consonants. As we saw above, for ejectives the airstream is produced by raising the closed glottis; for implosives the airstream results from lowering the closed glottis. By closing the glottis, and then lowering it, the air in the mouth becomes rarified with respect to that outside the mouth. Consequently, when the lips are opened for implosive b [6], the glottis already having been lowered, air from outside the mouth is sucked into the oral cavity creating an 'inverse b.' Implosives are sometimes described as 'preglottalized,' without reference to any implosion. In such cases the symbol [?b] is used.

Implosives are usually voiced, and occur most often at the bilabial point of articulation. They also occur in the alveolar, palatal, and (rarely) velar postions.

Ejectives and consonants produced with a pulmonic (i.e. lung) airstream are egressive. This means that air is forced out of the mouth. Implosives and clicks, however, are ingressive. By rarifying the air in the oral cavity, air is sucked into the mouth.

Clicks

The fourth type of airstream used in the production of speech sounds is called ingressive <u>velaric</u>, and sounds produced with this airstream are called <u>clicks</u>. Clicks are articulated in the following manner:

- The back of the tongue is drawn against the velum, creating a closure at the back of the oral cavity.
- A second closure is then created at the front of the oral cavity, either at the lips, or more often in the alveolar region.
- The body of the tongue is both lowered and drawn backward in the mouth, thereby rarifying the air in the oral cavity.
- 4. The closure at the front of the oral cavity is released, allowing air outside the mouth to be sucked in, creating a clicking sound.
- 5. The back of the tongue is lowered from the velum.

The velar release may be made silently, or with a perceptible fricative release. A dental click with a silent velar release is symbolized [\dagger]; with a fricative release, [\dagger ^X]. Furthermore, clicks may be glottalized [\dagger ²], aspirated [\dagger ^h], and voiced and nasal [\dagger].

What is unusual about clicks is that they are used as 'normal' speech sounds (i.e. sounds capable of being combined with other sounds to form words) only in southern Africa. Clicks are, nevertheless, quite commonly used in the rest of the world as 'interjections,' that is, as sounds with a specific meaning. (Remember that the speech sounds which we use in forming words--p, k, r, i--do not by themselves have any meaning.) Speakers of English use four such clicks on occasion. A bilabial click [q] is used to represent a kiss; a dental click [1], often written 'tsk tsk,' expresses mild

disapproval. In Rumanian this same click is used as an emphatic way of saying 'no'; it means something like 'No, of course not!' A <u>lateral alveolar</u> click [3] is used in English to urge on horses, or to call cats and dogs. All three of these clicks have a slight affricative quality; that is, their release is accompanied by noticable friction. The fourth type, a <u>retroflex</u> click, has a 'clean' release, creating a sharp 'popping' noise which is similar to the sound of a cork popping out of a bottle. Children produce this sound on occastion, though it does not have any commonly accepted meaning in English, as far as I know. It is symbolized [C].

ASPIRATION

Practically all of the consonants outlined above may be modified in certain ways to produce sounds which are similar to, but distinct from, the original sound. We will now discuss these modifications, beginning with <u>aspiration</u>.

It was pointed out in section 1.5 that English voiceless stops (i.e. /p/, /t/, /k/) are usually aspirated. In French /p/, /t/, and /k/ are unaspirated; Thai, and many other languages, have both aspirated and unaspirated stops contrasting with each other. Aspiration is a brief period of voicelessness occurring between a voiceless consonant and the following (voiced) vowel. If the vocal cords start vibrating slightly after the release of a voiceless consonant, there will be a brief period of voicelessness (i.e. aspiration) separating the voiceless stop (affricate or fricative) from the following voiced vowel. (We will see in section 3.3 below that vowels are almost always voiced.) This short period of voicelessness is phonetically identical to an h sound, and it is just this symbol which linguists use to represent aspiration (e.g. [ph], [th], etc). If, however, voicing begins either slightly before, or simultaneous with, the release of the consonant, we will have simply a voiceless consonant followed by a voiced vowel, with no aspiration (i.e. voicelessness) separating the two. Voiceless consonants produced in this manner are unaspirated: [p], [t], etc. Aspiration may be thought of, then, as a <u>delay in</u> voicing for the following vowel.

In some languages (e.g. Burmese) aspiration may precede, rather than follow, a consonant. Sounds produced in this way are variously described as 'preaspirated' (e.g. [hm]) or voiceless (e.g. [m]).

NASALIZATION

In addition to nasal stops (e.g. \underline{m} , \underline{n}), which are found in almost all languages, some languages use $\underline{nasal(ized)}$ fricatives, affricates, laterals, and vibrants as distinctive speech sounds. A nasalized \underline{f} [\tilde{f}], for instance, is produced exactly like an oral [f], except that the velum is at rest, permitting air to pass out through both the oral \underline{and} nasal cavities.

Some languages (e.g. Malay) use sounds which are prenasalized; that is, they begin with the velum at rest and the entrance to the nasal cavity open. After a brief nasal segment is produced, the velum is retracted against the pharyngeal wall, closing off the nasal cavity, and an oral consonant results. A prenasalized b is represented as ["b].

LENGTH

Length distinctions among consonants are much less frequent than length distinctions among vowels, but they are found in a number of languages (e.g. Italian, Icelandic). In languages with both long and short (i.e. normal length) consonants, the closure (or obstruction) is held for a longer period of time for the long (or geminate) consonant than for the short counterpart. In affricates it is the stop portion of a long affricate which is lengthened. Long segments, however, are not necessarily twice as long as their short partners. A long \underline{t} is represented phonetically as $[\overline{t}]$; a short consonant has no special

mark [t].

SECONDARY ARTICULATIONS

During the production of consonants, organs of speech which normally play no role in the pronunciation of a given sound may form a secondary articulation (that is, a distinct type of sound) which is superimposed on the original sound. Four types of secondary articulation are common:

LABIALIZATION
PALATALIZATION
VELARIZATION
PHARYNGEALIZATION

Labialization means that the lips are rounded and pushed forward (as they are for the vowel oo in 'boot') during the production of the sound. In English the initial \underline{k} of 'kick' [kik] is not labialized, while the initial \underline{k} in 'quick' [kwik] is labialized. Labialization occurs most often with velar consonants, but is also found at other points of articulation.

Palatalization refers to the raising of the blade of the tongue toward, but not touching, the roof (i.e. hard palate) of the mouth. This tongue position (cf. Figure 2 in section 3.3 below), which is superimposed on palatalized consonants, is the tongue position used for the production of high front glides and vowels (i.e. the sound y in 'yes,' or ea in 'beat,' see sections 3.3 and 3.4 below). For non-palatalized consonants the tongue remains low in the mouth, in a 'neutral' position. Russian contrasts palatalized consonants with non-palatalized consonants at several places of articulation; for example, the only difference between the Russian words for 'brother' [brat] and 'to take' [brat¹] is that the former ends in a non-palatalized t, whereas the latter ends with a palatalized t (i.e. [t¹]).

Velarization is the raising of the back of the tongue toward, but not touching, the velum (see Figure 3 in section 3.3 below). This is the same tongue movement involved in producing the vowel oo in 'boot,' but whereas the lips are rounded for the vowel, they remain unrounded for velarized consonants. In English the /l/ phoneme has two allophones, a non-velarized [1] in syllable initial position (e.g. 'leak,' 'lick,' 'like'), and a velarized [1^{lm}] in syllable final position (e.g. 'feel,' 'full,' 'milk'). In some languages the distinction between velarized and non-velarized consonants is phonemic.

Pharyngealization means that during the articulation of a consonant the back of the tongue is retracted toward the pharyngeal wall. (This is similar to the tongue position shown in Figure 4 of section 3.3 below, except that the root of the tongue in Figure 4 is not as retracted as it is for pharyngealized consonants.) This same tongue movement is involved in producing a low back vowel (i.e. a sound similar to the vowel of 'caught'). Many Arabic dialects have a series of pharyngealized (also called 'emphatic') consonants contrasting with their non-pharyngealized partners.

The following table summarizes the four types of secondary articulation:

NAME	DESCRIPTION	SYMBOL
Labialization	Lips rounded	Ьw
Palatalization	Blade of tongue raised	ьj
Velarization	Back of tongue raised	ρm
Pharyngealization	Root of tongue retracte	d b ¹⁰

It should be noted that no single language uses both velarized and pharyngealized consonants phonemically, though either of these may occur with palatalized and/or labialized consonants in the same language.

3.3 VOWELS

The articulation of vowels is much easier to describe than that of consonants. All vowels are produced with an (egressive) pulmonic airstream and the vocal cords vibrating; that is, all vowels are voiced. (In some languages--e.g. Comanche, Cheyenne--voiceless vowels occur as allophones of the normal voiced vowels; no language, however, uses voiceless vowels phonemically.)

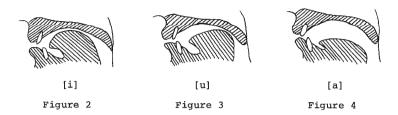
The pronunciation of vowels involves just two parameters:

- The position of the highest point of the tongue in the mouth (i.e. 'high' vs. 'low'; 'front' vs. 'back').
- 2. The shape of the lips (rounded or unrounded).

TONGUE POSITION

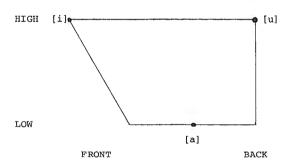
Remember that what distinguishes consonants from vowels (and glides) is that for consonants there is an obstruction of the flow of air at some point in the vocal tract, while for vowels the air is allowed to escape unimpeded. In permitting the air to escape unimpeded, however, the tongue may still assume a number of different positions in the mouth, the only requirement being that it not be raised so close to the roof of the mouth so as to create friction.

When the tongue is raised to a position just <u>below</u> the point at which friction would result were the raising continued, a <u>high vowel</u> will be heard (e.g. [i], [u], cf. Figures 2 and 3 below). If, on the other hand, the tongue is held low in the mouth, a <u>low vowel</u> will result (e.g. [a], cf. Figure 4 below):



Furthermore, the highest point of the tongue may be located towards the <u>front</u> of the oral cavity, as in Figure 2 above, or somewhat further <u>back</u>, in the velar region, as in Figure 3. If the high point of the tongue is anterior, a <u>front vowel</u> (e.g. [i]) is heard; if the high point is posterior, a <u>back vowel</u> (e.g. [u]) results. Figures 2, 3, and 4 above show the tongue positions for [i], [u], and [a] (the vowels of 'beat,' 'boot,' and 'pot,' respectively).

It is customary to represent vowels on a chart, where the position of any vowel indicates both its $\underline{\text{height}}$ ('high' vs. 'low') and depth ('front' vs. 'back'):



[i] is a <u>high front</u> vowel; [u], a <u>high back</u> vowel; and [a], a <u>low central</u> vowel. Other vowels fall somewhere in between these extremes:

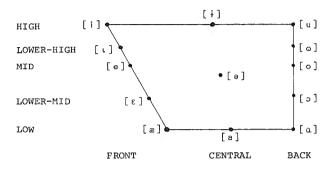


Figure 5

The following list will give you an idea of how each of these vowels sounds:

- [i] as in English 'beat'
- [1] as in English 'bit'
- [e] as in English 'bait'
- [ɛ] as in English 'bet'
- [æ] as in English 'bat'
- [i] as in Russian \underline{mu} 'we'; does not occur in English.
- [e] as in English 'but'
- [a] as in English 'pot'
- [u] as in English 'boot'
- [o] as in English 'put'
- [o] as in English 'boat'
- [o] as in English 'bought'
- [a] as in British English 'calm'

Table 1

The vowel positions indicated in Figure 5 are in no sense absolute; rather they represent a partitioning of a

continuum which linguists have found useful in describing the sound systems of languages. Other partitionings may distinguish either more points on the vowel continuum, or fewer. No matter how many points one might assign symbols to, this would never suffice to assure that each possible vowel position had its own symbol because the number of points on a continuum is infinite. What linguists have been forced to do, consequently, is to use a phonetic 'grid' of a certain degree of fineness, and then to specify actual vowel positions with respect to established points on the chosen grid. Thus, for really fine phonetic distinctions, one can say 'slightly below $[\varepsilon]$ ' and the like. In fact, the phonetic detail in most of the linguistic literature is nowhere near this fine, so that the phonetic grid which we have adopted in this work proves satisfactory in all but a handful of cases.

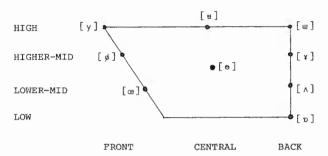
LIP ROUNDING

If you pronounce the vowels in Table 1, while paying attention to the movement of your lips, you will notice that for [u] ('boot'), [o] ('put'), [o] ('boat') and [o] ('caught'), the lips are pushed forward and rounded. If you pay close attention, you will observe that lip-rounding is most pronounced for [u] and least pronounced for [o]. The general tendency in human languages is for front and central vowels to be unrounded, and back vowels rounded, with higher back vowels having more lip-rounding than lower back vowels. As you can see this is the case in English.

A goodly number of languages, however, have both rounded and unrounded vowels at the <u>same point</u> on the vowel chart. Such languages have either <u>front rounded</u> vowels or <u>back unrounded</u> vowels (or both), in addition to the front unrounded and the back rounded vowels which almost all languages possess.

The following chart gives the phonetic symbols for

front rounded, central rounded, and back unrounded vowels:



The higher the vowel, the more lip-rounding it has.

French, German, and Hungarian all have front rounded vowels; French has [y], $[\phi]$, and $[\varpi]$, while German and Hungarian have only [y] and $[\phi]$. In French, for example, the only difference between vie 'life' and vu 'seen' is that the vowel of the latter [y] is rounded, while for the former [i] the lips are spread apart. Turkish, on the other hand, has the back unrounded vowel $[\omega]$.

NASALIZATION

All the vowels described up to this point have been cral vowels; that is, they are pronounced with the velum drawn back, cutting off the nasal cavity. Many languages, in addition to oral vowels, have a set of nasal vowels. In pronouncing a nasal vowel the velum assumes the rest position, letting the airstream exit through both the mouth and nose. Such nasalization is indicated by placing the symbol [~] over the appropriate oral vowel.

French has three nasal vowels, $[\tilde{a}]$, $[\tilde{a}]$, and $[\tilde{o}]$. The French words which are written <u>beau</u> 'beautiful' and <u>bon</u> 'good' have the following phonetic representations:

beau: [bo] bon: [bo]

Portuguese has five nasal vowels: [7], [8], [8], [0], and [6].

LENGTH

Many languages have both long and short vowels which contrast phonemically. 'Short' vowels are really vowels of normal length, while long vowels are longer than the corresponding short vowels, but their actual length depends on several factors (e.g. rate of speech). Long vowels occur frequently in the world's languages.

German is a language which contrasts long and short vowels. The only difference in pronunciation between the two words <u>Stadt</u> 'city' and <u>Staat</u> 'state' is that the former has a short vowel, the latter, a long vowel:

Stadt: [[tat]
Staat: [[tat]

3.4 GLIDES

Recall that <u>glides</u> share properties with both vowels and consonants. They are like vowels in that they are voiced and are produced without obstruction of the airstream. They resemble consonants in being non-syllabic, i.e. not able to stand alone.

Most languages have one or two glides, and some have even more. The two glides which are found in most languages are front unrounded [j] and back rounded [w] (the tongue positions for [j] and [w] are shown above in section 3.3, Figures 2 and 3, respectively). [j] is the non-syllabic counterpart of the vowel [i], and [w] is a non-syllabic [u]. English usually writes [j] as y (e.g. 'yes,' 'day'), and [w] as w (e.g. 'we,' 'bow').

Some languages lack either [j] (e.g. Maori) or [w] (e.g. Albanian and Bulgarian). French and Mandarin Chinese have a front rounded glide [u], in addition to [j] and [w].

Normally glides are high; that is, phonetically they are non-syllabic high vowels. In some languages, however, glides occur which are not high. Rumanian has two lower-mid glides, $[\xi]$ and $[\chi]$, and Bengali is reported to have a similar pair. British English has a glide which is mid and central: $[\xi]$.

DIPHTHONGS

During the production of vowels the tongue is held in a <u>fixed</u> position in the mouth. Many languages, however, use sounds during the articulation of which the tongue is allowed to glide from one position to another. Sounds produced in this manner are called <u>diphthongs</u>. A diphthong is, then, a vowel either preceded or followed by a glide; a diphthong functions, however, not as a sequence of two segments, but as a single unit. In English the vowels of 'beat;' 'bait,' 'boot,' 'boat,' and 'bite' are really diphthongs rather than pure vowels:

beat: [bi^jt]
bait: [be^jt]
boot: [bu^wt]
boat: [bo^wt]
bite: [ba^jt]

In Part II I have not listed the diphthongs of each language for several reasons. First, it is not always easy to tell whether one is dealing with a true diphthong, or simply a sequence of vowel + glide (or glide + vowel). The glide component of diphthongs is, however, listed with the glides. Thus, while German does not have [w] in syllable initial position, [w] does occur in diphthongs, and has therefore been listed with the other glide, [j], which occurs in both syllable-initial and syllable-final position.

3.5 STRESS AND TONE

Both the loudness and pitch of one's voice may vary. Loudness correlates with the linguistic feature known as stress, and is used to organize the rhythm of a sentence. In a language such as English, certain syllables in a word are stressed, others unstressed. For example, of the three syllables in the word 'president,' only the first is stressed: [pié·zə·dənt]. Note, however, that in 'presidential' stress is not on the initial syllable, but rather on the next-to-last syllable: [pie·zə·dén·ʃəi]. In English, stress is sometimes determined by grammatical category; for instance, the noun 'insult' is stressed on the first syllable, but the verb 'insúlt' is stressed on the second syllable. Languages like English are said to have phonemic stress in that a change in the position of stress may signal a change in meaning.

In many languages, however, the position of stress is 'non-phonemic,' being <u>fixed</u> on some particular syllable of the word. In Irish, Danish, Czech, and Latvian stress falls automatically on the <u>initial</u> syllable of a word. In French, Armenian, Persian, and Hebrew it is on the <u>final</u> syllable. In Polish the <u>penultimate</u> (next-to-last) syllable is stressed, and in Welsh the <u>antepenultimate</u> (next-to-next-to-last) syllable of a word receives greatest stress.

The pitch of one's voice correlates with the linguistic features of intonation and tone. English uses differences in tone to distinguish different kinds of sentences. A declarative sentence (i.e. a statement) ends with falling pitch: He isn't going, while a question ends with rising pitch: He isn't going? When pitch is used in this way linguists say that the sentences have different 'intonation contours.'

In many languages, however, differences in pitch may be used to distinguish words, not just sentences, as in the English example above. Languages which use differences in pitch to distinguish words are called 'tone languages.' Both Chinese and Vietnamese are tone languages. In Mandarin Chinese a syllable may have one of four tones: (1) high level, (2) low rising,

(3) mid falling-rising, (4) high falling. If the sounds [ma] are pronounced with a high level tone (i.e. pitch), the meaning of the word is 'mother.' Pronounced with a low rising tone, [ma] means 'hemp'; with a falling-rising tone, the meaning is 'horse.' Finally, if pronounced with a high falling tone, [ma] means 'scold.'

The tones of a language are described in terms of two parameters: pitch height: high, higher-mid, mid, lower-mid, low, and pitch contour: level, rising, falling, rising-falling, falling-rising.

In some languages (e.g. Hottentot) tone is a property of the morpheme or word, not the syllable. Unless otherwise specified, however, the tones which are listed for a language are to be interpreted as having the syllable as their domain.

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4 PHONETIC TRANSCRIPTION

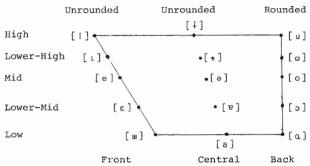
The following is a list of phonetic symbols for all the speech sounds cited in Part II:

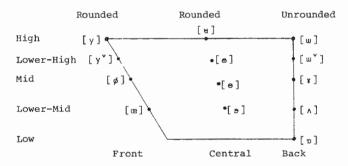
4.1 consonants

	Bilabial	Labiodental	Interdental	Dental	Alveolar	Retroflex	Palatal*	Velar	Labial-Velar	Uvular	Pharyngeal	Glottal
Stops	p b			<u>t</u> <u>d</u>	t d	ţ d	c j	k g	Кр gb	q		?
Affricates	pf		± ⁰ ₫ŏ	ts dz	t ^s t d ^z d	č	j j	k ^X g				
Fricatives	Φ β	f V	θ ð	<u>s</u>	s z	s ∫.	∫ ç 3 j^	×		Я	h ?	h h
Approximants		V		ĭ	٦	١	j		w			
Nasals	m			Д	n	ū	ת	ŋ	m̂ŋ	N		
Laterals				Ţ	I 4	l	٨					
Trills				ŗ	r	ŗ				R		
Flaps				ť	r	ť						
Ejectives	Р?			ţ?	t?		c ?	k?	κ̂ρ [?]	q?		
Implosives	6 [?] b		٤	, d	ď ?	1 ,	3,	g ,				
Clicks	q			ļ	∮ 3	C						

^{*}Includes both palatal and palato-alveolar sounds.







4.3 GLIDES

[j]: High front urrounded
[y]: High front rounded

[w]: High back rounded

[w]: High back unrounded

[e]: Mid front unrounded

[ə]: Mid central unrounded

[o]: Mid back rounded

4.4 DIACRITICS

```
N: Nasal (m,n,ŋ)
[h]: Aspirated
[~]: Nasalized
                      L: Liquid (I,r,)
                      G: Glide (j,w)
[ ]: Long
[ ]: Dental
                      N: North
[ ]: Retroflex
                E: East
[ ]: Fortis
                S: South
[ ]: Voiceless W: West
[ ]: Breathy Voice C: Central
[ ]: Creaky Voice
[ ?]: Ejective/Preglottalized
[9]: Voiced Click
[ ]: Coarticulated
[ ]: Syllabic
[ ]: Palatalized
[w]: Labialized
["]: Velarized
[D]: Pharyngealized
[ 4]: Voiceless Lateral Fricative
[片]: Voiced Lateral Fricative
[ i]: Lateral Flap
[ ]: Phonetic Transcription
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/ /: Phonemic Transcription

5 LANGUAGE FAMILIES OF THE WORLD

As we saw in section 1.2, the distribution of the world's languages in terms of number of speakers is highly skewed, ranging from a few languages with many speakers to many, indeed most, languages with relatively few speakers. The geographical distribution is equally uneven. While most languages serve as a means of communication only in a very limited area, a few languages are spoken over a vast territory. English, for example, is today the official language throughout all of North America, and Spanish the official language in all of Central and South America (except in Brazil, where Portuguese is spoken).

In terms of language families the distribution is even more unequal. The Indo-European family of languages, for instance, is currently spoken by more people, and over a larger area, than any other language family. Of the earth's 3.7 billion people, over 1.7 billion speak an Indo-European language, and on over 60% of the earth's inhabitable land mass an Indo-European language is the official language.

The dominant position of the Indo-European family is of recent date, being a direct consequence of the colonial policies launched by the European nations around 1500 A.D. From this time forward various European powers (e.g. Spain, Portugal, France, Great Britain, Russia) began a policy of dividing the rest of the world among themselves, exploiting both the wealth and people of the newly 'discovered' territories so that the European nations could enjoy a standard of living incommensurate with their own natural resources.

Eventually many of these European colonies gained independence, but in the Western Hemisphere it was the European colonizers, not the indigenous people, who remained in control

of the conquered territories. Of the current 212 million inhabitants of the United States, fewer than 800,000 are Indians. Similarly, of the 13 million inhabitants of Australia, less than 50,000 are Aborigines. In these and other cases, the native languages and cultures are today on the verge of extinction.

Columbus' 'discovery' of the New World in 1492 (some thirty or forty thousand years after its original discovery by Asiatic peoples, who in time populated the entire Western Hemisphere) brought an abrupt end to a process of human differentiation which had been going on for upwards of three million years. From that time on, racial, cultural, and linguistic diversity have been increasingly replaced by uniformity. In North America alone a single language and a single culture succeeded in supplanting a myriad of native Indian languages and cultures.

It is because the European expansion after 1492 introduced such a distortion in the geographical distribution of the world's languages that linguists generally describe the linguistic situation of the world as it was prior to the advent of European colonialism. In our discussion of the language families of the world we will follow that practice.

5.1 AFRICA

Slightly under 400 million people now live on the African continent, and except for several European remnants of the earlier colonial period, the overwhelming majority of these people has inhabited Africa for many millennia. Although the number of distinct languages currently spoken in Africa is estimated at 800-1,000, all of these languages belong to one of four language families:

AFRO-ASIATIC NIGER-KORDOFANIAN NILO-SAHARAN KHOISAN The latter three language families are located south of the Sahara Desert; the Afro-Asiatic family is spread across the northern part of the continent.

While these families are not known to be more closely related to each other than to language families found elsewhere in the world, they do often share certain typological features. For example, most African languages are tone languages. Other characteristics shared by languages in two or more of the above-mentioned families include nasal vowels, labial-velar consonants, implosives, prenasalized stops, and a marked preference for open syllables. As noted earlier, only in Africa are clicks used as normal speech sounds, primarily by languages of the Khoisan family.

AFRO-ASIATIC

In spite of the fact that the number of different Afro-Asiatic languages is not large, its speakers number some 175 million, including 100 million speakers of Arabic alone. Afro-Asiatic languages are spoken primarily in north Africa, from Morocco and Mauritania in the west to Egypt and Ethiopia on the eastern coast. Furthermore, as the name implies, this family extends into SW Asia (e.g. Saudi Arabia, Syria, Iraq).

While there is no necessary correlation between language and race, since people of any race will learn whatever language is spoken around them as they grow up, the factors which have led to both racial and linguistic differentiation are much the same. It is for this reason that an imperfect correlation between race and language often exists. For example, most Indo-European languages (e.g. English, French, Russian, Hindi) are spoken by light-skinned persons who are often described as 'Caucasoid'; similarly, Afro-Asiatic languages are by and large spoken by Caucasians. However, in both cases there are exceptions. Black Americans speak English, an Indo-European language, but are members of the Negroid race. Similarly, speakers of the Chadic branch of Afro-Asiatic, the

only branch found in Sub-Saharan Africa, are also predominantly Negroid.

Afro-Asiatic is subdivided into six branches, one of which became exinct in the 17th century:

SEMITIC
BERBER
CHADIC
CUSHITIC
OMOTIC
tEGYPTIAN

In terms of both number of speakers (125 million) and geographical spread (from NW Africa to Asia Minor), the Semitic branch outweighs the other five branches in importance. Its best known languages are Arabic, Hebrew, and Amharic, the latter the national language of Ethiopia. The Berber lanquages, with seven million speakers, were formerly widespread throughout north Africa. However, the Arabic expansion eastward from the Arabian Peninsula in the 7th century A.D. largely submerged the various Berber languages, which are today spoken chiefly by people bilingual in Arabic. Chadic languages are spoken in the area east and west of Lake Chad by 30 million persons. This branch of Afro-Asiatic is distinguished from all other branches in three respects. First, its speakers are Negroid, rather than Caucasoid. Secondly, it is located in Sub-Saharan Africa, and thirdly, it is the only branch of Afro-Asiatic whose languages are in general tonal. Hausa, the most important Chadic language, has over six million native speakers, and is used widely in west Africa as a lingua franca. Languages of the Cushitic branch are spoken in east Africa by over 13 million people. The Omotic languages are considered by some a branch of Cushitic, by others, an independent branch of Afro-Asiatic.

Unlike the majority of African languages, those of

the Afro-Asiatic family are generally not tonal. Only in the Chadic branch do we find a distinctive use of tone, apparently borrowed from one of the other African language families. Pharyngeal and pharyngealized ('emphatic') consonants, as well as complex consonant clusters, are common in Afro-Asiatic, but rare elsewhere in Africa. Like the Indo-European family, many Afro-Asiatic languages have sex gender in the noun, verb, and adjective. Sex gender is found only sporadically in the rest of the continent.

NIGER-KORDOFANIAN

The Niger-Kordofanian family has several million more speakers than Afro-Asiatic (181 million), but many more languages, with estimates ranging as high as 900. This family is spoken throughout much of the southern half of Africa, from Senegal on the Atlantic Ocean to Kenya in east Africa, and all the way south to the Cape of Good Hope. Its speakers are predominantly Negroid.

Niger-Kordofanian is divided into a few Kordofanian languages spoken in the Nuba Hills of the Sudan, and a very large Niger-Congo group, whose geographical distribution was described above. Niger-Congo, in turn, comprises six branches:

WEST ATLANTIC
MANDE
GUR
KWA
ADAMAWA-EASTERN
BENUE-CONGO

The West Atlantic branch is spoken in Senegal, Guinea, and Sierra Leone; its most important languages are Fulani and Wolof, the former with over seven million speakers. Mande, with only 26 languages, is the smallest branch of Niger-Congo, and is spoken to the east of the West Atlantic group in Niger, Sierra

Leone, and Liberia. <u>Gur</u> languages, such as Mossi with almost four million speakers, are spoken east of the Mande group, in Upper Volta and northern Ghana. The <u>Kwa</u> group contains a number of important languages; Yoruba and Igbo each boast over six million speakers, and Twi, Ewe, Fő, and Bini, over a million each. Kwa languages are spoken along the coast of the Gulf of Guinea, from Ivory Coast eastward into Nigeria. The <u>Adamawa-Eastern</u> branch extends from east central Nigeria through Cameroon, the Central African Republic, northern Zaire, and into the western part of the Sudan. Its best known language, Sango, is used as a lingua franca in central Africa.

The <u>Benue-Congo</u> branch contains more languages, and occupies a larger territory, than all the other branches of Niger-Congo put together. It is reported to contain more than 500 different languages, and extends from Nigeria on the west coast to Tanzania in the east, and as far south as South Africa. The <u>Bantu</u> languages are by far the most important sub-branch of Benue-Congo, with over 55 million speakers. In fact, in terms of number of speakers and geographical distribution there is little difference between Benue-Congo and its Bantu sub-branch. Swahili, with over eight million native speakers, is the most important Bantu language, and is also used as a <u>lingua franca</u> throughout much of east Africa. Fourteen other Bantu languages are reputed to have over a million speakers each, among which Zulu, Xhosa, Shona, Luganda, and Kikongo are perhaps the best known.

The wide geographical distribution of the Bantu languages is the result of an expansion to the east and south which began some two millennia ago from an area which is today east central Nigeria. Thus it appears that originally all Niger-Congo languages were spoken in a relatively restricted area of west central Africa. The pygmies of the Congo basin have adopted Niger-Congo (and Nilo-Saharan) languages, so that whatever language(s) they originally spoke is unknown.

Niger-Congo languages are usually tonal (though one of its best known members, Swahili, is not) and often possess nasal vowels. Most branches of Niger-Congo (excluding Mande and Kwa) use a system of 'noun classes' similar to the 'gender classes' of the Indo-European and Afro-Asiatic languages. However, the number of these noun classes is much larger than the maximum of three gender classes (i.e. masculine, feminine, and neuter), and sex is not one of the semantic properties used to distinguish them.

NILO-SAHARAN

The Nilo-Saharan family, with perhaps 25 to 30 million speakers, is located in east and east central Africa, north of the Niger-Congo languages and south of the Afro-Asiatic family. Like Niger-Kordofanian, its speakers are predominently Negroid. Our knowledge of Nilo-Saharan languages is at present nowhere near as extensive as for Niger-Congo and Afro-Asiatic languages.

Nilo-Saharan consists of four sub-groups and two independent languages:

> CHARI-NILE SAHARAN MABAN KOMAN Fur Songhai

The most important branch is Chari-Nile, which is itself divided into an Eastern Sudanic group (of some 60 languages), and a Central Sudanic group. Important Chari-Nile languages include Luo, Nuer, Masai, Sara, and Nubian. The Saharan languages are spoken over an extensive area north and west of Lake Chad; its best known language, Kanuri, is spoken in NE Nigeria. The small Mahan and Koman groups are spoken in Chad and on the Ethiopia-Sudan border, respectively. Speakers

of Fur presently live in western Sudan, and Songhai, formerly the language of a medieval Negro empire centered around Timbuktu, is now spoken along the Niger River in SW Niger and Mali.

Like the vast majority of Sub-Saharan languages, those in the Nilo-Saharan family are generally tonal. Unlike the Niger-Kordofanian languages, however, nasal vowels are rare, and the languages do not possess noun classes, though some do use two sex genders. A complicated set of verbal derivatives is common, and nouns are often inflected for case.

KHOISAN

Approximately fifteen Khoisan languages are spoken in southern Africa by less than 150,000 people, most of whom belong to the Bushman-Hottentot race. These yellow-skinned peoples are racially quite distinct from speakers of Afro-Asiatic, Niger-Kordofanian, and Nilo-Saharan languages. It seems likely that Khoisan languages were once much more wide-spread in southern Africa, but the Bantu expansion from the north and the European invasion from the south have today relegated Khoisan speakers to the inhospitable region around the Kalahari Desert.

The Khoisan family is divided into three branches and two independent languages:

NORTHERN CENTRAL SOUTHERN Sandave Hatsa

The most prominent Khoisan language is Hottentot, the various dialects of which belong to the Central branch. Its chief dialect, Nama, is spoken by 40,000 Hottentots, as well as 50,000 Bergdama, a Negroid people who have replaced their original language with Nama. Sandawe and Hatsa, both of

which are presently spoken in Tanzania, are only remotely related to the other Khoisan languages (and to each other).

Although the Khoisan languages are spoken by few people in a relatively restricted area, from a linguistic point of view they are among the most fascinating languages in the world. Only Khoisan languages (and a few neighboring Bantu languages, e.g. Zulu, Xhosa) use clicks as ordinary speech sounds. Most noun, verb, and adjective roots in Khoisan languages are disyllabic, with clicks occurring only in initial position. The second position is filled by either o or a, the third position by one of a restricted set of non-click consonants, and the fourth position by any vowel. In addition to clicks, Khoisan languages are characterized by tone and nasal vowels, and sporadically (e.g. Hottentot, Sandawe) by sex gender. As is the case with Nilo-Saharan, documentation of the Khoisan languages is at present sparse.

5.2 EUROPE

In Europe we find several hundred million more people than in Africa (around 640 million), but far fewer languages (c. 100). Except for Basque, which is a <u>language isolate</u> (i.e. a language which is not known to be related to any other language), all the languages currently spoken in Europe belong to one of three language families:

INDO-EUROPEAN URALIC CAUCASIAN

As its name implies, the Indo-European family extends from Europe to India, encompassing most of Europe, parts of Asia Minor (e.g. Iran), and running through Afghanistan and Pakistan into north India. Caucasian languages are spoken in the Caucasus, the area of SE Europe between the Black and Caspian Seas. Uralic languages are found in Hungary, Finland, and

.

northern Europe. In addition, they extend across the Ural Mountains into NW Asia.

INDO-EUROPEAN

With the colonial expansion of various European countries from 1500 onward, a number of Indo-European languages were carried throughout the world. Spanish came to be the official language in Central and South America (except for Portuguese in Brazil), and in North America English gradually supplanted the native Indian languages. In like manner, other European languages (e.g. French, Russian, Dutch, Italian) spread to various parts of the world. Partly as a result of this expansion, slightly less than half the people in the world today speak an Indo-European language. In what follows, however, we will discuss the Indo-European family only in terms of its original, pre-Columbian, distribution.

Around 4,000 B.C. there were people living in the southeastern part of Europe, west of what is today the Ukraine, who spoke a language which linguists call Indo-European (or Proto-Indo-European); we do not know what they called it. By 3,000 B.C. the Indo-European population had spread westward, and had begun to break up into distinct groups. As these groups became geographically isolated, what had originally been local dialects of Indo-European developed into separate languages. Although the oldest recorded texts of an Indo-European language (i.e. Hittite) date from the 17th century B.C., it is clear that by 2,000 B.C. Indo-European had already dissolved into a number of distinct languages. It is these languages which, in turn, gave rise to the eleven branches of the Indo-European family:

BALTIC SLAVIC GERMANIC ITALIC CELTIC
INDO-IRANIAN
Greek
Albanian
Armenian
†TOCHARIAN
†ANATOLIAN

Two of the branches (Anatolian and Tocharian) are today extinct and three others (Greek, Albanian, and Armenian) are represented by a single language.

Latvian and Lithuanian are the only two surviving Baltic languages; the former is spoken by about two million people in the Latvian SSR, the latter by some three million persons, most of whom live in the Lithuanian SSR. Some scholars favor grouping the Baltic languages with the Slavic languages into a single Balto-Slavic branch of Indo-European. Such a grouping remains, however, a controversial one, and is rejected by a number of linguists.

The Slavic languages are divided into three branches:

EAST: Russian, Byelorussian, Ukranian

WEST: Polish, Czech, Slovak SOUTH: Serbo-Croatian, Bulgarian

From the fifth to tenth centuries A.D. the Slavs expanded in all directions, eventually covering most of the Balkans and Eastern Europe. At the same time Slavic migrations were encroaching on Uralic peoples to the north, and filling a fairly empty plain to the east. There are presently about a dozen different Slavic languages, with a total population of 250 million.

 $\begin{tabular}{lll} The $\underline{$\tt Germanic}$ branch of Indo-European is represented by two sub-branches: \end{tabular}$

WEST: English, German, Dutch, Flemish, Yiddish NORTH: Icelandic, Norwegian, Swedish, Danish

After breaking away from the other Indo-European speakers, the Germanic branch migrated to the area which is today northern Germany and southern Scandinavia. From here a series of expansions beginning in the first century B.C. carried Germanic languages over much of Europe. An Eastern branch of Germanic, located north of the Black Sea, became extinct in the 18th century with the disappearance of its last surviving language, (Crimean) Gothic. Within Germanic the lines separating one language from another are not sharply defined, with dialects of one language merging into dialects of supposedly distinct languages. There is, for example, a good deal of mutual intelligibility among people speaking Norwegian, Swedish, and Danish. Over 430 million people speak one of the dozen Germanic languages, including 300 million speakers of English, and almost 100 million of German.

Two thousand years ago there were a number of Italic languages spoken in what is now Italy. With the establishment and expansion of the Roman Empire to the Atlantic Ocean in the west and the Black Sea in the east, the principal Italic language, Latin, submerged the other Italic tongues, which died out soon after the beginning of the Christian Era. Following the disintegration of the Roman Empire around 500 A.D. the various local dialects of Latin lost contact with one another and began to evolve along independent lines. These Latin dialects became, in time, the modern Romance languages, which are divided into Eastern and Western branches. The sole representative of the Eastern branch is Rumanian, while the Western branch includes Italian, French, Spanish, Portuguese, and number of languages which have not developed into national languages (e.g. Provençal, Catalan, Sardinian). Altogether there are close to 500 million speakers of a dozen Romance languages.

Prior to the establishment and expansion of the Roman

Empire, <u>Celtic</u> languages were widely spoken throughout Europe, from the Iberian Peninsula in the west across Europe to the Balkans and into Asia Minor in the east. As Latin spread over much of this area, however, the various Celtic groups were first submerged, and later assimilated to the Latin speaking populations. Only in the more inaccessible regions of the British Isles did Celts manage to preserve their language down to the present day. On the European continent itself Celtic languages probably became extinct before 500 A.D. (One Celtic language, Breton, is today spoken in Brittany, on the NW coast of France. It was, however, brought back to the European continent from the British Isles between the 5th and 7th centuries A.D., and does not represent a survival of continental Celts.) The Celtic family has two branches:

BRYTHONIC: Welsh, Breton
GOIDELIC: Irish (=Gaelic), Scottish Gaelic

The four extant Celtic languages are spoken by only two million speakers, the vast majority of whom are bilingual in either English or, in the case of Breton, French. A number of scholars believe that Celtic and Italic together form a single branch of Indo-European (=Italo-Celtic); such a grouping is not widely accepted, however.

The <u>Indo-Iranian</u> branch of Indo-European consists of two sub-branches: <u>Indic</u> and <u>Iranian</u>. Already a separate branch of Indo-European by 2,000 B.C., it is likely that Indo-Iranian remained more or less unified for another millennium. But around 1,000 B.C. there are indications of the arrival of the Indic sub-branch into the northwestern portion of the Indian subcontinent, and we may assume that from this time forward the two branches went their own way. Just as the modern Romance languages all derive from Classical Latin, the modern Indic languages have evolved from Classical Sanskrit. There are today roughly 35 Indic languages spoken in north and central India, as

well as Pakistan, by over 400 million people. Eight Indic languages possess more than ten million speakers each (i.e. Hindi-Urdu, Bengali, Punjabi, Marathi, Gujarati, Bihari, Oriya, and Rajasthani). Romany, the language of the gypsies, is an Indic language, though its various dialects have borrowed extensively from surrounding languages.

The <u>Iranian</u> sub-branch includes roughly twenty languages with fifty million speakers. Iranian languages are spoken in Iran, Afghanistan, Pakistan, and parts of the USSR. Persian, the national language of Iran, has twenty-five million speakers and Pashto, the national language of Afghanistan, fifteen million.

The Greek, Albanian, and Armenian branches of Indo-European are each represented by a single living language. Greek, with its long literary history, has been spoken on the Greek Peninsula since at least 1,600 B.C. The Iliad and the Odyssey date from approximately the eighth century B.C.

The Albanian language is thought to continue one of the Indo-European languages spoken on the Balkan Peninsula before it was overrun, first by the Celts, then by the Romans, and finally by the Slavs. Both Illyrian and Thracian have been advanced as the ancestor of modern Albanian, but the paucity of linguistic evidence, which is limited to proper names and a handful of words, makes any determination difficult. Furthermore, the entire Albanian vocabulary was profoundly affected by massive borrowings from Latin. Modern Albanian consists of two somewhat different dialects; it is currently spoken by three million people, half of whom live in Albania, with the rest in neighboring Yugoslavia.

About four million persons speak Armenian, mostly in the Armenian SSR, south of the Caucasian Mountains. Inscriptions indicate the Armenians inhabited their present locality prior to the 8th century B.C.

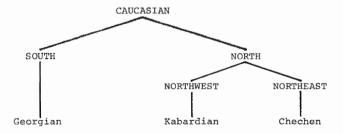
<u>Anatolian</u> and <u>Tocharian</u> represent separate, extinct branches of Indo-European. Tocharian is known only from a series of documents, dating from around 700 A.D., which were discovered among ancient ruins in western China toward the end of the last century.

It is ironic that the most recently discovered branch of the Indo-European family should provide us with the most ancient texts in any Indo-European language, but such is the case with Hittite. Archaeological excavations in central Turkey at the start of the 20th century unearthed the capital of the ancient Hittite empire, and soon a large cache of Hittite cuneiform tablets were found. From these we know that the Hittite empire flourished from around 1700 B.C. to 1200 B.C. at which time it was destroyed by unknown invaders. Hittite and a few other (extinct) languages form the Anatolian branch of Indo-European.

Modern Indo-European languages are often characterized by sex gender, case systems, a voice contrast in the stops, and ablaut (e.g. English 'sing/sang/sung'). Nasal vowels are found sporadically, and tone is used to distinguish words (as in Chinese) only rarely.

CAUCASIAN

Approximately thirty-five Caucasian languages are currently spoken by a total of five million persons, most of whom live in the Caucasus, a mountainous region in the SW USSR lying between the Black Sea and the Caspian Sea. A limited number of speakers are also found in neighboring Iran and Turkey. The Caucasian family of languages is divided into two branches, North and South, the former containing two sub-branches:



Some scholars regard a genetic relationship between the Northern and Southern branches to be as yet unproven. Both the Southern and Northwestern branches contain few (3-4) languages, while the Northeastern branch is represented by upwards of thirty distinct languages.

The oldest Caucasian texts are in Georgian, and date from the fifth century A.D. Georgian is today spoken by almost three million persons, and is the official language of the Georgian SSR. The Northwestern branch is spoken primarily in the Abkhazian ASSR by half a million people, while numerous Northeastern languages are centered in the Daghestan ASSR and number over a million speakers. The numerically strongest Northwestern language, with 275,000 speakers, is Circassian (one dialect of which is known as Kabardian); in the Northeastern branch, Chechen (600,000), Avar (400,000), and Lezghian (220,000) are the most widely used.

Speakers of Caucasian languages are in general lightskinned. It is not known where the Caucasian people came from, nor how long they have inhabited their present territory.

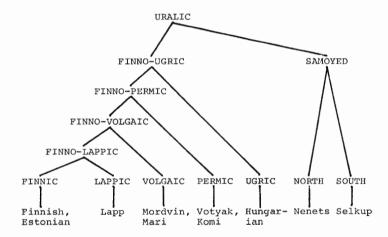
Caucasian languages, both North and South, are characterized by ejectives, a case system, and the ergative construction. In addition, languages of the Southern branch exhibit initial clusters of up to six consonants, a lack of sex gender and articles (both definite and indefinite), as well as an ablaut system reminiscent of Indo-European (from which several words were apparently borrowed: cf. Proto-South-Caucasian *t^ep 'warm' vs. Indo-European *tep 'warm'). Both Northern branches have noun classes based on the category of 'person' (i.e. 'human' vs. 'non-human'), with the human class further subdivided into 'man' and 'woman.' In addition, labialized consonants, and a contrast between 'strong' (i.e. tense, long) and 'weak' voiceless stops, are found in both NW and NE Caucasian.

Northwestern languages are characterized by a great multiplicity of consonants (70-80), and only two distinctive vowels. The Northeastern languages have simpler consonant

systems, but often display phonemically long, nasal, or pharyngealized vowels.

HRALIC

Uralic languages are spoken over a large expanse of northern Europe, from Scandinavia eastward across the Ural Mountains into NW Asia. Some twenty languages, with 22 million total speakers, are divided into two main branches, Finno-Ugric and Samoyed. The structure of the Uralic family is shown in the diagram below:



THE URALIC FAMILY

The Samoyed branch has only 30,000 speakers, and Hungarian (14 million) and Finnish (5 million) together account for most of the Finno-Ugric branch. Racially the Uralic peoples show both Caucasoid and Mongoloid features, with the Caucasian features more prominent at the western end of the Uralic territory, and Mongoloid traits prevalent in the more eastern speakers (e.g. the

various Samoyed peoples). While their language is similar to Finnish, the Lapps are racially quite different from the Finns, and their proper classification has stirred considerable controversy.

Proto-Uralic, of which all the modern Uralic languages are descendents, is thought to have been spoken in the region of the northern Ural Mountains around 6,000 B.C., give or take a millennium either way. Some time between 8,000 B.C. and 5,000 B.C. what was to become the Samoyed branch broke off from the main Uralic group and apparently migrated in a northeastern direction into NW Asia. The rest of the Uralic speakers, the Finno-Ugrians, remained unified for several more millennia, during which time they drifted south, eventually arriving in the central Volga area, 400 miles east of present-day Moscow. Around 3,000 B.C. the future Ugrians separated from the Finno-Ugric group, which in turn disintegrated, with various peoples moving northwestward along the Volga, and others northeasterly along the Kama River.

The earliest Uralic text, a 12th century Hungarian funeral oration, postdates the Indo-European Hittite tablets by almost 3,000 years.

The <u>Ugric</u> branch of Finno-Ugric consists of two subbranches. The western Ugrians, the Hungarians, represent an island of Uralic speakers surrounded by Indo-Europeans; the eastern Ugrians, the so-called Ob-Ugrians, live along the Ob River across the Ural Mountains in western Asia. The 14 million Hungarians, some two million of whom live outside the present borders of Hungary (mostly in Rumania), arrived in the Carpathian basin toward the end of the 9th century A.D. The Ob-Ugrians entered Asia some time after 1300 A.D., having lived previously on the other side of the Urals in eastern Europe. The two Ob-Ugric languages, Ostyak and Vogul, have less than 20,000 speakers between them.

The <u>Permic</u> branch contains just two languages, Votyak and Komi, with a total of one million speakers. Permic lan-

guages are currently spoken west of the Ural Mountains, roughly 700 miles northeast of Moscow. The <u>Volgaic</u> branch is also comprised of just two languages, one of which (Mordvin) is, with over a million speakers, the third most populous Uralic language. The other Volgaic language, Mari, is spoken by over half a million people. Both languages are spoken along the Volga, several hundred miles east of Moscow.

The Lappic languages, with less than 35,000 speakers, are spread across the northern part of Scandinavia, from Norway through Sweden and Finland to the Kola Peninsula. Approximately eight Finnic (or Balto-Finnic) languages are spoken in Finland and in continental Europe around the Gulf of Riga in the Estonian and Latvian SSR's. Finnish has five million speakers, and Estonian close to one million.

The five <u>Samoyed</u> languages, with only 30,000 speakers, are divided into two branches, North and South. The Samoyed peoples are today widely dispersed across the northern coast of Europe, from the area of the White Sea in the west to the Taymyr Peninsula in NW Asia. Nenets, a Northern language, has 24,000 speakers, while Selkup, the last extant Southern language, is spoken by only a couple of thousand.

Linguistic characteristics of the Uralic family include vowel harmony, long vowels, a propensity for word-initial stress, a case system, and a verb-final sentence structure (i.e. SOV), though several of the more western languages (e.g. Hungarian, Finnish, Lapp) have adopted the Indo-European SVO order. Consonant gradation is also found in both Finno-Ugric and Samoyed languages. While length distinctions among consonants and vowels are not uncommon in the family as a whole, Estonian is remarkable in that it distinguishes three degrees of length in both consonants and vowels. Two degrees of length are lexical, while one is grammatically conditioned.

The Uralic family has been linked by various scholars with both the Indo-European family, and especially with the (Asian) Altaic family. It has been recognized for more than a

century that the Uralic and Altaic families share a number of typological features; consequently, the debate has been on whether such common features are the result of a genetic relationship, or are to be explained simply as an areal convergence of genetically unrelated languages.

5.3 ASIA

Six language families are found primarily on other continents, but spill over into Asia:

AFRO-ASIATIC INDO-EUROPEAN URALIC CAUCASIAN AUSTRO-TAI ESKIMO-ALEUT

As we have already seen, Afro-Asiatic covers north Africa and extends into Asia Minor, while Indo-European, Uralic, and Caucasian lie predominently in Europe, with extensions into Asia. The Austro-Tai family covers a huge expanse of ocean, from the island of Madagascar (off the east coast of Africa) to the Hawaiian Islands. It also includes such languages as Malay, Thai, and Lao, which are spoken in SE Asia. Eskimo-Aleut speakers are found primarily in North America; there are, however, small numbers in NE Asia.

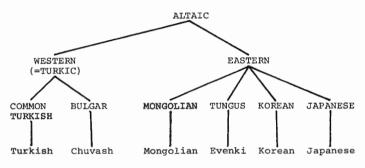
Five language families are indigenous to Asia:

ALTAIC [PALEOSIBERIAN] DRAVIDIAN SINO-TIBETAN AUSTRO-ASIATIC The Altaic family extends from one end of Asia to the other. Turkish, Mongolian, Korean, and Japanese all belong to this family. 'Paleosiberian' is a term used to designate a group of language isolates which are all spoken in eastern Siberia. Unlike the other language families discussed in this chapter, Paleosiberian is thus a geographical, not a genetic, term. Dravidian languages are found in the southern half of India. Languages belonging to the Sino-Tibetan family are spoken in China, Tibet, Burma, and a few other countries. Austro-Asiatic languages occupy much of SE Asia, especially Vietnam, Cambodia, and Laos, with islands of speakers in Thailand, Burma, China and India.

ALTAIC

The Altaic family represents one of the more controversial groupings among the world's languages; the controversy has a long history and continues today. As early as the 18th century it was noted that the Turkic, Mongolian, and Tungus languages shared a number of features. These shared characteristics led to a debate between those who attributed such similarities to common origin and those who denied a common source for the three language groups, claiming the similarities to be the result of borrowing between languages which, while genetically unrelated, had at one time existed in close proximity to one another. Before the original 'Altaic debate' had been brought to conclusion (indeed, there are even today linguists who reject a genetic relationship among the Turkic, Mongolian, and Tungus languages, though such scholars are a decided minority), other languages (i.e. Korean and Japanese) were hypothesized to be members of the original Altaic unity. First, similarities between Korean and the other three branches were noted; secondly, substantial evidence was uncovered linking Korean and Japanese to a common origin. Now if Korean is genetically related to the other three Altaic branches, and if Japanese is genetically related to Korean, then it follows that Japanese must itself be an Altaic

language. Finally, within the last decade, a comparison of Proto-Japanese-Korean forms with reconstructed forms for the other three branches has resulted in a considerable body of evidence evincing a distant genetic relationship between the Turkic, Mongolian, Tungus, Korean, and Japanese languages. Miller (1971) offers the following diagram as a possible representation of the structure of the Altaic family:



THE ALTAIC FAMILY

The evidence supporting the above grouping is still tentative and controversial, and further research is needed. Nevertheless, the Altaic hypothesis, including Korean and Japanese, appears to be on the road toward confirmation.

The Altaic family (as defined above) is composed of 35-45 languages, spoken by a total of 225 million people over a vast portion of the Asian continent. Altaic languages are found primarily in Turkey, the Soviet Union, China, Mongolia, Korea and Japan, with lesser numbers in Rumania, Bulgaria, Afghanistan, Iran, and other countries. The earliest Altaic documents of any length are in Japanese and date from the 7th century A.D. It is impossible at present to pinpoint the original habitat of the Proto-Altaic speakers; before the incorporation of Korean and Japanese into the Altaic family, a home-

land in central Asia, in the steppe area bordering the Altaic Mountains, was often mentioned. Nor is it possible to determine with any precision when Proto-Altaic existed. Physically, Altaic speakers generally possess Mongoloid characteristics.

The <u>Turkic</u> family of languages, with roughly 20 languages and 66 million speakers, is the only member of the Western branch of Altaic. It is divided into two unequal branches; the Bulgar branch consists of just one language, Chuvash, spoken in the USSR by a million and a half people. The other branch, Common Turkic, includes the rest of the Turkic languages, of which Turkish, with over 30 million speakers, is the best known. Other Turkic languages, however, have substantial numbers of speakers: Uzbek (7 million), Azerbaijani (7 million), Tatar (5 million), Uighur (4 million), Kazakh (4 million), Turkmen (2 million), Kirghiz (1 million), Bashkir (1 million). Turkic languages are presently spoken over a wide area, from the Balkans in Eastern Europe, through Turkey into Central Asia. The earliest Turkish texts, the Orkhon Inscriptions, date from the 8th century A.D.

Mongolian languages are centered in Mongolia, with substantial numbers of speakers in neighboring USSR and China. There are approximately half a dozen Mongolian languages divided between an Eastern and a Western branch. Of the three million Mongolian speakers, over two-thirds speak the Khalkha dialect, which is the official language of the Mongolian People's Republic. The earliest Mongolian texts date from the 13th century.

Tungus languages are today spoken primarily in the Soviet Union (E Siberia), though scattered pockets of speakers are also found in China. The Tungus family is divided into Northern and Southern branches, and is represented by fewer than 200,000 speakers. The language with the most speakers is Evenki (32,000).

The Korean language, spoken on the Korean Peninsula by approximately 45 million persons, consists of a number of strongly differentiated dialects. Japanese is spoken by over 105 million persons on the islands of Japan; in comprises a number of mutually intelligible dialects in addition to a distinct, but related, language used by the people of the Ryukyu Islands south of Japan.

Altaic languages are generally of the agglutinative type; that is, a word consists of several component parts which remain distinct in both form and meaning. For example, Turkish ev-ler-in 'of the houses' is made up of three elements:

Agglutinating languages are thus different from inflectional languages such as Latin, where several different functions may be collapsed into a single suffix. For instance, <u>cas-arum</u> 'of the houses' consists of the stem <u>cas-</u>, meaning 'house', and the suffix -<u>arum</u>, which signifies <u>both</u> plurality and possession:

Like Uralic languages, Altaic languages frequently employ grammatical cases, and often exhibit vowel harmony. (Although traces of harmony are found in Old Japanese, vowel harmony does not exist in either contemporary Japanese or Korean.) Other characteristics found in at least some of the Altaic branches include (1) simple consonant systems, (2) few consonant clusters, (3) no definite articles, (4) no sex gender, and (5) a preference for postpositions over prepositions. Altaic languages are usually not tonal, though the Japanese word-pitch accent bears a striking resemblance to a tonal system.

[PALEOSIBERIAN]

As mentioned above, the term 'Paleosiberian' has a geographical, rather than a genetic, meaning. It is applied to eight languages, all of which are spoken by small numbers of people in NE Siberia. Three of the languages (i.e. Ket, Yukaghir, and Gilyak) are language isolates; the other five belong to the small Chukchi-Kamchatkan family. Several centuries ago the Paleosiberian languages enjoyed a much wider distribution in north Asia. However, recent history has been one of continual encroachment on the Paleosiberian territory by various peoples; the Paleosiberian languages are presently spoken by fewer than 26,000 people living in isolated enclaves scattered across NE Asia.

The <u>Chukchi-Kamchatkan</u> family, with five languages and 20,000 speakers, stretches across the eastern portion of the Chukchi Peninsula, extending down the western side of the Kamchatkan Peninsula. The Chukchi language is spoken by approximately 12,000 people in the NE part of the Chukchi Peninsula; south of the Chukchis we find 8,000 Koryak speakers. Kamchadal is spoken by 400 persons on the Kamchatkan Peninsula. Kerek and Alutor each has fewer than 100 speakers remaining.

Just to the west of the Chukchis, in the NW region of the Chukchi Peninsula along the Indigirka and Kolyma Rivers, live 450 speakers of Yukaghir. At an earlier time both Yukaghir and Chukchi were found much further west than their present territory.

Some 1,500 Gilyak speakers are found on the island of Sakhalin. Ket is spoken by 1,000 people along the Yenisey River, approximately 2,000 miles west of the Yukaghirs.

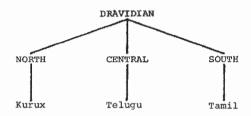
Although the Paleosiberian languages are not known to be genetically related to each other, they do share several linguistic features. Uvular stops and a case system are found in all the Paleosiberian languages, and vowel harmony, a voice contrast among stops, a length contrast in vowels, consonant alternations, and a large number of loanwords characterize many Paleosiberian languages. The Chukchi-Kamchatkan languages

oppose long and short stops, but do not exhibit the voice contrast found in Yukaghir, Gilyak, and Ket. Like a number of North American Indian languages, Chukchi-Kamchatkan languages employ syntactic incorporation. The loan portion of their lexicons reflects the different historical contacts of the various languages. Loans from Turkic and especially Tungus are common in all the languages; in addition, Ket possesses many loans from Selkup, Chukchi from Eskimo, and Gilyak from Ainu. In recent years Russian has of course been a prime source of loans.

DRAVIDIAN

In our discussion of the Indo-European family we saw that most of northern India is covered by Indic languages (e.g. Hindi, Bengali, Punjabi). The languages of southern India, however, belong to a different family of languages, the Dravidian family. Approximately 23 Dravidian languages are currently spoken, chiefly in the southern portion of India, by roughly 150 million people. There have been several theories as to where the Dravidian people came from, and to what other families the Dravidian languages might be related (the Uralic family is one hypothesis). However, no further genetic affiliation is today widely accepted.

It would appear that speakers of Proto-Dravidian originally entered NW India during the fourth millennium B.C. During the first half of the second millennium B.C. Dravidian speakers spread from NW India in a southeasterly direction until, around 1500 B.C., three large dialect areas covered most of the Indian subcontinent, and probably portions of Pakistan as well. The following three and a half millennia saw these three broad dialects gradually evolve into the three branches of the Dravidian family:



THE DRAVIDIAN FAMILY

Around 1,000 B.C. speakers of Proto-Indic first penetrated the northwest portion of India, and by the beginning of the Christian Era had occupied much of north India, with Dravidian speakers either retreating southward or being overrun, and eventually assimilated, by the Aryans. Today only the Brahui language, spoken on the Pakistan-Afghanistan border, testifies to an earlier, more widespread, distribution of the Dravidian languages. Except for Brahui, all contemporary Dravidian languages are spoken within India, primarily in the south, though there are a few scattered enclaves of speakers in the northeast region. Speakers of Dravidian languages are often dark-skinned, but they are physically quite different from both black Africans and dark-skinned Melanesians.

The North Dravidian branch is comprised of only three languages. Brahui, separated from all other Dravidian languages by 1,000 miles, is spoken by 300,000 people in Pakistan. The other two Northern languages, Malto and Kurux, are spoken in the states of Bihar and Madhya Pradesh, respectively. Kurux has over a million speakers, while Malto has somewhat fewer than 90,000.

The numerically strongest Dravidian language, with 50 million speakers, is Telugu, a member of the <u>Central</u> branch, and the official language of the state of Andhra Pradesh. Telugu is one of four Dravidian languages recognized by the Indian constitution, the other three being Kannada, Tamil, and

Malayalam. All four have their own orthography and a long literary history, in contradistinction to most other Dravidian languages, which are unwritten. The only other Central Dravidian language with over a million speakers is Gondi, spoken north of the Telugu area by roughly a million and a half people.

Four <u>South Dravidian</u> languages are spoken by over a million persons: Tamil (45 million), Kannada (25 million), Malayalam (20 million), and Tulu (1 million). Tamil is the official language of Tamil Nadu (SE India), and is also spoken in the northern part of Sri Lanka (Ceylon). Kannada is spoken in the state of Mysore, southwest of the Telugu area. Malayalam speakers are distributed along the southwest coast of India, primarily in the state of Kerala, where it serves as the official language. Tulu is spoken along the western coast of India, just north of Kerala. The earliest Dravidian texts are in Tamil, and date from the third century B.C.

One of the most salient characteristics of Dravidian languages is a series of retroflexed consonants, including stops, nasals, laterals, and vibrants. Other features commonly found in the Dravidian family include (1) initial stress, (2) an agglutinative structure in which a number of suffixes may follow the stem, but prefixes and infixes are practically non-existent, (3) a distinction between 1st person plural inclusive and exclusive, (4) a set of negative verb forms corresponding to the positive forms, (5) well-developed dialects, which may have either a geographical or social basis. Furthermore, the literary languages (i.e. Telugu, Kannada, Tamil and Malayalam), show marked 'diglossia'; that is, the standard literary language is quite different from the colloquial regional dialects.

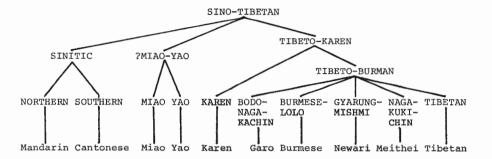
Despite the fact that the Dravidian languages are not genetically related to the Indic branch of Indo-European, Indian languages in general have a number of features in common. Many Indic languages, for example, have borrowed retroflection from

the Dravidian family. Indic languages have borrowed several structural features (both phonological and grammatical) from Dravidian, but have borrowed relatively few loanwords. Dravidian languages, on the other hand, have incorporated a substantial number of Indic loanwords in the Dravidian lexicon, but show relatively little structural influence. As is common in many parts of the world, genetically unrelated languages spoken in the same geographical region share certain 'areal' features, which may be presumed to have diffused over the centuries from one group of languages to other, contiguous, groups of languages.

SINO-TIBETAN

In terms of number of speakers the Sino-Tibetan family ranks second only to Indo-European. Spoken by roughly 600-700 million people in east Asia (chiefly China, Tibet, and Burma), Sino-Tibetan comprises upwards of 300 distinct languages, most of which are poorly documented.

The traditional classification of Sino-Tibetan languages, in which the various Chinese 'dialects' and the Tai languages form one branch, while Tibeto-Burman languages form a second, coordinate branch, is no longer generally accepted. Instead the Tai languages are now believed to be related to the Austronesian family in a large stock known as Austro-Tai. (Linguists use the terms 'stock' and 'phylum' to designate language families which are particularly ancient, and which themselves contain several different language families.) Furthermore, the exact relationship of the Karen and Miao-Yao languages to Sino-Tibetan remains a matter of controversy. The folowing diagram illustrates one view of the structure of the Sino-Tibetan family:



THE SINO-TIBETAN FAMILY

The Chinese 'dialects' employ a logographic, rather than an alphabetic, system of writing. This means that a given word is written with a symbol which represents the word itself rather than the component sounds of the word, as is the case with alphabetic systems. Although they are not mutually comprehensible, the various dialects are all written alike so that, while a speaker from Canton and Peking cannot communicate with each other through speech, they can communicate in writing. It is for this reason that one speaks of Chinese dialects rather than Chinese languages. From a strictly linguistic point of view, however, it must be kept in mind that Mandarin (the speech of Peking) and Cantonese (the speech of Canton) are just as much independent languages as are, say, Portuguese and Italian, or English and German.

The various Chinese dialects constitute the <u>Sinitic</u> branch of Sino-Tibetan. Sinitic is in turn divided into Northern and Southern sub-branches. Mandarin, a Northern dialect upon which the national language is based, is spoken by 400 million persons. The Southern dialects, spoken south of the Yangtze River, include several languages with substantial numbers of speakers: Wu (46 million), Cantonese (27 million), Hsiang (26 million), Hakka (20 million), Southern Min (15 million),

Kan (13 million), and Northern Min (7 million). Chinese inscriptions from around 1500 B.C. offer the earliest attestation of any Sino-Tibetan language.

The Miao-Yao languages are concentrated in southern China and neighboring Vietnam, Laos, and Thailand. Almost two-thirds of the three million Miao-Yao speakers live in the Kweichow province of China. The genetic affiliation of the Miao-Yao languages has been the subject of considerable disagreement. Different scholars have proposed membership in the Sino-Tibetan, Austro-Asiatic, and Austro-Tai language families.

Approximately eight <u>Karen</u> languages are spoken in Lower Burma and along the western border of Thailand. The total number of speakers is around two million, of whom almost half speak Sgaw. Some linguists consider Karen a branch of Tibeto-Burman.

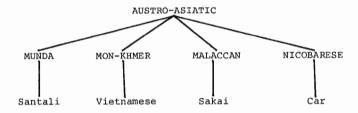
The <u>Tibeto-Burman</u> branch, with 25 million speakers, consists of two major sub-branches, Tibetan and Burmese-Lolo, and three minor sub-branches, Bodo-Naga-Kachin, Gyarung-Mishmi, and Naga-Kuki-Chin. Tibetan, consisting of several distinct languages, is spoken by four million people in Tibet. The Burmese-Lolo languages (roughly 50 languages with 20 million speakers) are spoken in Burma and NE India; Burmese, the official language of Burma, has 15 million speakers. One million people speak two dozen Bodo-Naga-Kachin languages; Garo is spoken by 300,000 people in Assam, India. The most populous of the fifty Gyarung-Mishmi languages, Newari, is spoken by 400,000 people in Nepal; other Gyarung-Mishmi languages are found in NE India and southern Tibet. The almost 100 Naga-Kuki-Chin languages are located in northern Burma and neighboring portions of NE India (Assam).

The majority of languages are tonal; that is, words may be distinguished solely by the pitch of the voice. In addition to tone, Sino-Tibetan languages are characterized by monosyllabic words, initial consonant alternation, and ablaut.

Chinese, Tibetan, and Burmese all differentiate transitive verbs from corresponding intransitive verbs by means of initial consonant alternation; a voiced consonant appears in the intransitive verb, a voiceless one in the transitive verb. Consonant clusters are avoided in many Sino-Tibetan languages.

AUSTRO-ASIATIC

The Austro-Asiatic family, consisting of roughly 150 languages with a total of 40 million speakers, is concentrated in the SE corner of Asia (Vietnam, Cambodia, and Laos), though islands of speakers, some with substantial numbers, are scattered across Thailand, Burma, S China, NE India, continental Malaysia, and the Nicobar Islands in the Andaman Sea. Wider affiliations of Austro-Asiatic, particularly with Austro-Tai, have been proposed, but for the moment do not enjoy wide acceptance. Austro-Asiatic is divided into four (numerically disparate) branches:



THE AUSTRO-ASIATIC FAMILY

The <u>Mon-Khmer</u> branch has more speakers, more languages, and a wider geographical distribution than any other branch of Austro-Asiatic. Close to 100 languages, spoken by some 35 million persons, are scattered over much of SE Asia, from NE India across the Indochinese peninsula to Cambodia and Vietnam. In addition to Khasi and Cambodian (also called Khmer), the former spoken by 200,000 people in NE India, the latter by six million

Cambodians, Mon-Khmer consists of seven sub-branches:

PALAUNG-WA: Palaung

MONIC: Mon KHMUIC: Khmu'

VIET-MUONG: Vietnamese

KATUIC: Pacoh
BAHNARIC: Chrau
PEARIC: Pear

The Palaung-Wa sub-branch, with ten languages and over a million speakers, is spoken in enclaves of varying size in NW Thailand, E Burma, and S China. Monic languages (of which there are only two, Mon and Niakuol) are found in SE Burma, across the Gulf of Martaban from Rangoon, as well as west of Bangkok, along the Thailand-Burma border. Mon itself has over 400,000 speakers. The Khmuic sub-branch contains perhaps a dozen distinct languages spoken in islands of varying size in N Laos. The Viet-Muong languages, of which Vietnamese, with 28 million speakers, is the best known, are dispersed throughout Vietnam. Vietnamese and Cambodian, both members of Mon-Khmer, are the only national languages in the Austro-Asiatic family. Katuic languages are spoken primarily in S Laos and neighboring Vietnam, with small groups also found in Cambodia; there are fewer than a quarter million speakers. Languages belonging to the Bahnaric sub-branch of Mon-Khmer are spoken in NE Cambodia, SE Laos, and contiguous portions of Vietnam. Most of the half million speakers live in Vietnam. A half-dozen Pearic languages, with fewer than 5,000 speakers, are dispersed through Cambodia.

It is estimated that Proto-Mon-Khmer, the language from which all contemporary Mon-Khmer languages are descended, constituted a unified language some time in the second millennium B.C. The earliest Austro-Asiatic texts are in Old Mon and date from the sixth century A.D.

The Malaccan languages are variously classified as

either a sub-branch of Mon-Khmer, or an independent branch of Austro-Asiatic. Approximately 17 languages and 37,000 speakers are found in continental Malaysia and the southern tip of Thailand.

The <u>Nicobarese</u> branch of Austro-Asiatic consists of a dozen different languages, spoken on the Nicobar Islands by fewer than 10,000 people.

Munda languages constitute the westernmost branch of Austro-Asiatic, and are spoken in central and NE India by six million people. Santali alone has three million speakers, and Mundari, a million and a half. Munda speakers were in India prior to the arrival of the Aryans around 1000 B.C. The Munda languages share certain linguistic characteristics with other Indian (i.e. Indic and Dravidian) languages which distinguish them from the more eastern Austro-Asiatic languages.

In discussing the linguistic characteristics of the Austro-Asiatic family both Vietnamese and the Munda languages must be considered phonologically and morphologically aberrant. The former has adopted a number of non-Austro-Asiatic features as a result of over a thousand years domination by the Chinese, while the latter share many linguistic traits with other (non-Austro-Asiatic) Indian languages.

Phonologically, Austro-Asiatic languages are characterized by relatively simple consonant systems, and rich vowel systems. An opposition between voiced and voiceless stops is common, and an independent voiceless aspirated series also occurs, either in addition to, or in place of, the voice contrast. Implosives are found in several branches of Mon-Khmer, as are preglottalized nasals and liquids. Final stops are often unreleased.

Vowel systems frequently distinguish four degrees of height, front, central, and back. In addition, long vowels are common, and nasal vowels occur sporadically. Several languages exhibit a contrast between two series of vowels, one series characterized either by breathy or creaky voice, the

other by normal voicing. Except for Vietnamese, Austro-Asiatic languages are generally not tonal.

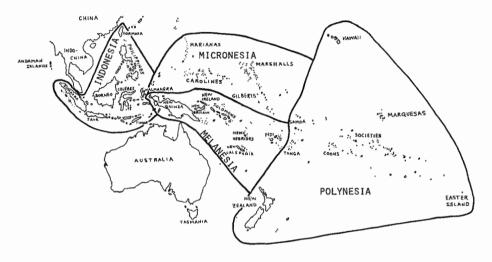
Words usually consist of a major syllable, which may be optionally preceded by a minor syllable. Major syllables have the form (C)CVC; minor syllables, either CV or a syllabic consonant. Most roots are monosyllabic. Prefixes and infixes are common, but suffixes (except in the Munda and Nicobarese languages) are rare. Munda languages exhibit a complex morphology, while Vietnamese has practically no morphology at all.

The general order for sentence constituents is SVO; the Munda branch, however, like other Indian languages, prefers SOV. Adjectives normally follow the noun they modify. Austro-Asiatic languages use prepositions (rather than postpositions), and often employ the ergative construction in syntax. Not only have Austro-Asiatic languages served as a source of loanwords for other SE Asian languages, but they themselves have also borrowed freely from surrounding languages. In fact, the piecemeal distribution of language families in SE Asia (where languages from one family are often completely surrounded by languages from other families), combined with widespread loans between different families, makes the task of genetic classification in this part of the world a particulary vexing one.

5.4 OCEANIA

The islands of the Pacific Ocean (i.e. Oceania) are divided among five geographical areas:

INDONESIA
MELANESIA
MICRONESIA
POLYNESIA
AUSTRALIA & TASMANIA



OCEANIA

Most of Oceania has been inhabited by man only in relatively recent times. Skeletal remains of primitive man, dating back a million years, have of course been found in parts of what is today eastern Indonesia. But at the time Java man walked the earth large portions of Indonesia (e.g. Sumatra, Java, Borneo, Formosa) were still attached to the Asian mainland. Furthermore, there is no evidence that the current inhabitants of Oceania trace their ancestry back to Java man. Rather Oceania appears to have been populated by two distinct migrations of people from SE Asia, the first migration commencing around 40,000 B.C., the second several millennia before the birth of Christ. As we shall see, the people involved in these two migrations were both racially and linguistically quite different from each other.

It is estimated that there are today between 1,000 and 1,500 languages spoken in Oceania by a total population of slightly over 150 million people, all but three or four million of whom inhabit Indonesia (N.B. the geographical region, not the country!). In addition, another 30 million people in SE Asia speak languages related to those of Oceania. All Oceanic languages are believed to belong to one of three language families:

INDO-PACIFIC AUSTRALIAN AUSTRO-TAI

The <u>Indo-Pacific</u> stock is thought to contain upwards of 700 languages, almost all of which are found on the island of New Guinea, though a few Indo-Pacific languages are spoken on the islands to the west and east of New Guinea. There are perhaps two and a half million speakers.

Some 200 <u>Australian</u> languages are still spoken by at least a few Aborigines in Australia, and another 60 languages are now extinct. The total number of speakers is less than 50,000.

The <u>Austro-Tai</u> stock contains two large, and remotely related, families: <u>Kam-Tai</u> and <u>Austronesian</u> (the latter was formerly known as Malayo-Polynesian). Approximately 50 Kam-Tai languages are spoken in SE Asia by roughly 30 million people. The Austronesian family, with 500 languages and 150 million speakers, is, after Indo-European, the most widely dispersed language family in the world, stretching from the island of Madagascar off the east coast of Africa across the Pacific to Hawaii and Easter Island. Austronesian languages are spoken as far north as Formosa, and as far south as New Zealand. Compared with speakers of Australian and Indo-Pacific languages, the Austronesian peoples are relative newcomers to Oceania.

INDO-PACIFIC

The island of New Guinea is one of the least known areas in the world, and even today large portions of it remain practically untouched by modern civilization. It is not surprising, therefore, that the genetic unity of New Guinea languages was recognized only recently. Until the late 1940's New Guinea languages were thought to belong to a large number of small families, none of which were related to each other or to the already established Austronesian family. To distinguish New Guinea languages from Austronesian languages (a number of which are spoken along the coast of New Guinea) the terms 'Non-Austronesian' and 'Papuan' were coined, neither of which was intended to imply any genetic affiliation among the diverse New Guinea languages. During the 1950's, and especially the 1960's, a large amount of new information on New Guinea languages became available for the first time, and with it came a growing awareness that while all New Guinea languages might not belong to a single family, there were nevertheless several large families of languages found in various parts of the island. However, it was not until the early 1970's that substantial evidence was offered linking not only all of the 'Non-Austronesian' New Guinea languages, but also certain Non-Austronesian languages found on islands to the east and west of New Guinea, several languages spoken in the Andaman Islands, and the now extinct Tasmanian languages. Extending from the Indian Ocean through New Guinea into the Pacific, all of these languages are tentatively included in a single large and very ancient family, for which the name Indo-Pacific has been proposed. Given the present imperfect state of our knowledge, one can do little more than guess at the precise number of Indo-Pacific languages. scholar's current estimate is 700, spoken by roughly two and one half million people, mostly on the island of New Guinea itself. Although these people, who are traditionally called 'Melanesians', show considerable physical variation, they generally have dark skin, frizzly hair, and tend to be short (even pygmies are found

in certain areas of New Guinea). The Melanesians (i.e. speakers of Indo-Pacific languages) thus present a strikingly different appearance from both their taller light-skinned Polynesian neighbors in the east, and their light-skinned 'semi-Mongoloid' Indonesian neighbors to the west. They are also physically distinct from their southern neighbors, the Australian Aborigines, with whom, nonetheless, they do share a number of physical characteristics. Both are dark-skinned and dark-haired (with infantile blondness in both groups), but Australian hair tends to be wavy, not frizzly. (Both the Australian Aborigines and the Melanesians, though dark-skinned, are very different physically from a typical black African.) Culturally the sedentary agricultural Melanesians offer a sharp contrast to the nomadic Australians, who were hunters and gatherers, not farmers.

Although archeology, like linguistics, is still in its infancy in New Guinea, already stone tools dating from 25,000 B.C. have been found, and there is no reason not to expect this date to be pushed further back as more archaeological evidence is found. We must remember also that New Guinea and Australia were not separated by the Torres Strait until well after 20,000 B.C., and the oldest traces of man in Australia appear around 30,000 B.C.

The Indo-Pacific family consists of fourteen branches:

ANDAMANESE
† TASMANIAN
TIMOR-ALOR
HALMAHERA
WEST NEW GUINEA
NORTH NEW GUINEA
SOUTHWEST NEW GUINEA
SOUTH NEW GUINEA
CENTRAL NEW GUINEA
NORTHEAST NEW GUINEA
EAST NEW GUINEA

NEW BRITAIN
BOUGAINVILLE
CENTRAL MELANESIAN: CENTRAL SOLOMONS
SANTA CRUZ

Three or four different languages are spoken by fewer than 500 persons on the Andaman Islands, a north-south chain of islands located in the Bay of Bengal between southern Burma and the Nicobar Islands. The inclusion of the Andamanese languages in the Indo-Pacific family is probably the most tentative aspect of the entire grouping, though it is by no means without support.

When Abel Tasman discovered Tasmania in 1642 the island was inhabited by 5,000 to 8,000 persons, speaking two different, though closely related, languages. By the time of the first British settlement in 1801, the number of Tasmanians had been reduced to 3,000-5,000. In 1876 the last full-blooded Tasmanian died, and around the turn of the century the languages became extinct. As a consequence of their rapid demise, our knowledge of the Tasmanian languages is most incomplete. What little is known consists primarily of wordlists, with very little grammatical information. There are nevertheless, even in this fragmentary material, a number of striking resemblances with other branches of Indo-Pacific, a fact which should not be totally unexpected given that it had long been recognized that the Tasmanians physically resembled the Melanesians, not the Australians. Tasmanian culture, however, does show certain continuities with that of Australia. Until approximately 11,000 B.C. Tasmania was connected to Australia.

The <u>Timor-Alor</u> branch of Indo-Pacific consists of a half dozen languages spoken on two of the Lesser Sunda Islands (Timor and Alor) about 500 miles southwest of New Guinea. Bunak, spoken on Timor, has 50,000 speakers.

Less than 200 miles off the northwest coast of New Guinea lies the island of Halmahera. A dozen languages, spoken on the northern half of the island by several thousand people,

comprise the Halmahera branch.

New Guinea itself contains seven different branches of the Indo-Pacific family: West, North, Southwest, South, Central, Northeast, and East New Guinea. Altogether these seven branches have over two million speakers. Enga is spoken by about 130,000 people in the Western Highlands of the Territory of New Guinea, and several other languages have tens of thousands of speakers.

The final three branches of Indo-Pacific are spoken on islands of eastern Melanesia. Just off the northeast coast of New Guinea the islands of New Britain and New Ireland contain fewer than ten Indo-Pacific languages between them, several of which are on the verge of extinction. Altogether there are less than 10,000 speakers. Adozen Bougainville languages are spoken by a total of 37,000 persons on Bougainville, the northernmost of the Solomon Islands. The final branch of Indo-Pacific, called Central Melanesian, consists of two sub-branches, one spoken on in the central Solomon Islands (four languages and less than 3,000 speakers), the other on the Santa Cruz Islands (four languages and 6,000 speakers).

Some of the fourteen branches of Indo-Pacific are thought to be more closely related to each other than to other branches. The Timor-Alor, Halmahera, and West New Guinea branches, for example, are often considered to constitute a 'super-branch' of the Indo-Pacific family. In like manner the North, Southwest, South, and Central New Guinea branches, on the one hand, and the New Britain, Bougainville, and Central Melanesian branches, on the other, are believed to represent 'super-groups.'

Although Indo-Pacific languages manifest considerable structural diversity, certain features are commonly found in several branches. Phonologically, Indo-Pacific is characterized by tone and ablaut. A complex verb morphology, including both prefixes and suffixes, is common, and both gender and other kinds of noun classes are found. Nouns are frequently inflected for case, and just as often not inflected for number. The

characteristic word order for Indo-Pacific is SOV, and usually the possessor precedes the possessed (as in English 'the man's book'). Many languages lack articles. Like certain American Indian languages the subject, direct object and indirect object may in some languages be 'incorporated' into the verb.

AUSTRALIAN

Although Australia was first sighted by European explorers in the 17th century, the earliest British settlement (at Sydney) was not established until 1788, at which time there were an estimated 300,000 Aborigines spread over the entire continent. Today that figure has dwindled to 47,000, though in recent years the number of Aborigines has once again been on the increase. As mentioned previously, the Australian Aborigines are dark-skinned and dark-haired; hair runs from straight through wavy to frizzly in some areas, though it probably never reaches the wooly type found in Africa. Other features which distinguish the Australian natives from black Africans include (1) a prominent brow ridge, (2) infantile blondness, (3) hair is subject to graying and baldness, (4) the lips are not everted, (5) the nose is flater and more bulbous, (6) men have full beards and considerable body hair. While the Aborigines do share a number of physical characteristics (especially cranial) with the Melanesians of New Guinea, there are also differences which preclude the grouping of Australian Aborigines and Melanesians in a single continuous population.

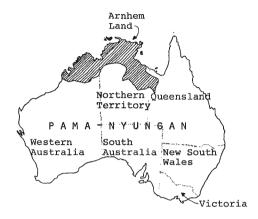
Of roughly 260 attested Australian languages, perhaps 200 are still extant. Many of these, however, have very few speakers left and will become extinct by the end of this century. The numerically strongest language, Mabuiag, is spoken by 7,000 people on the western Torres Strait Islands, off the northern coast of Australia. The Western Desert Language is spoken over much of Western Australia by some 4,000 Aborigines. Other numerically strong languages have only several hundred speakers

each.

The geographical distribution of Australian languages is quite simple to describe. All Australian languages are spoken on the Australian continent, and all indigenous languages spoken in Australia belong to the Australian family. This family contains the following twenty-eight branches (the number of languages in each branch is given in parentheses):

Tiwian (1)	DJINGILI-WAMBAYAN (3)
IWAIDJAN (5)	KARAWAN (2)
Kakadjuan (1)	Minkinan (1)
MANGERIAN (2)	LARAKIAN (2)
Gunavidjian (1)	Kungarakanyan (1)
Naragan (1)	Warraian (1)
GUNWINGGUAN (11)	DALY (10)
BURERAN (2)	Murinbatan (1)
Nunggubuyuan (1)	DJAMINDJUNGAN (4)
Andilyaugwan (1)	DJERAGAN (5)
MARAN (3)	BUNABAN (2)
Mangaraian (1)	WORORAN (12)
Ngewinan (1)	NYULNYULAN (4)
Yanyulan (1)	PAMA-NYUNGAN (177)

One of the more unusual aspects of the Australian family is that twenty seven of the twenty-eight branches (all except Pama-Nyungan) are spoken in just one-eighth of the Australian territory, in Arnhem Land and the northern part of Western Australia. The Pama-Nyungan branch, with its numerous languages, covers the other seven-eighths of the continent. In the map on the following page the location of the 27 non-Pama-Nyungan branches is indicated by shading:



AUSTRALIA

Figure 5

Australian prehistory provides some insight into the present highly skewed distribution of Australian languages. Recent archaeological findings indicate man's arrival in Australia prior to 30,000 B.C. From his first appearance until around 5,000 B.C. Australian culture manifested considerable uniformity with little innovation over thousands of years. Around the fifth millennium B.C. the picture changes drastically. New types of stone tools appear for the first time, as does a new arrival, the Australian wild dog, or dingo. not appear in Indonesia or New Guinea until much later, when they were borrowed from SE Asia.) We do not know where these new ideas (and new animals) came from, though the conclusion seems inescapable that they were brought to Australia by outsiders. Furthermore, at about this same time what were to become the Pama-Nyungan languages began to spread across Australia, moving from northwestern Australia southeastward until in time the entire continent (except for the northern region) came to

be covered with Pama-Nyungan languages. Whatever languages had originally been spoken in the southern seven-eighths of the continent were either swept into remote areas, or completely obliterated. Presumably the spread of the new tools and the dingo went hand in hand with the expansion of the Pama-Nyungan languages.

Linguistically the Australian languages exhibit a number of bizarre features which serve to distinguish them from all other language families. Bilingualism and multilingualism are very common, and dialect chains stretching almost a thousand miles have been found. (A dialect chain is a string of dialects in which neighboring dialects are mutually comprehensible, but non-neighboring dialects are not. For example, given a chain A-B-C, B is mutually intelligible with both A and C, though A and C are not mutually comprehensible.) Dialect chains are a not uncommon phenomenon, but it is doubtful that anywhere else in the world are they as long, or are the end points in the chain as different from each other as they are in Australia.

Probably the most startling characteristic of Australian languages is the incredible uniformity of their sound systems; their phonological homogeneity is surely unrivaled elsewhere in the world. Most Australian languages distinguish between four and six points of articulation, and as a rule the number of stops equals the number of nasal consonants. Interdental stops and nasals, retroflex stops and nasals (and, less often, retroflex laterals and vibrants), and a series of palatalized alveolar consonants are commonly found throughout Aus-Most languages have two or even three distinct r-sounds (i.e. a flap r, a continuant r as in American English, and less often a retroflex flap). Another striking feature of Australian phonologies is the almost total absence of affricates and fricatives as phonemes, though such sounds do occur frequently as allophones; the most common fricative in Australian languages, [ŏ] as in English 'mother,' is elsewhere in the world

one of the least common fricatives. A voice contrast among stops is practically non-existent in Australia. Unlike English (and many other languages) $[\eta]$, as in English 'sing,' occurs commonly in both syllable- and word-initial position. Vowel systems tend to be simple, often involving just three segments (i, u, a), with e and o as distinct speech sounds occurring less often. Nasal vowels and phonemic tone do not normally occur.

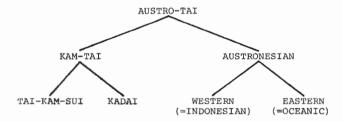
Except for the widespread Pama-Nyungan branch, which uses only suffixes, Australian languages often employ prefixes, infixes, and suffixes. Both gender and other noun class systems are found; nouns are frequently inflected for case, though much less often for number. Personal pronouns distinguish singular, dual, plural, and sometimes even trial; in addition, the 1st person plural forms have both inclusive and exclusive forms. Complex demonstrative systems are another trait of Australian languages.

In syntax we often find a great flexibility in word order, though SOV is the most common order for sentence constituents. Markers indicating the subject and object of the sentence are often attached to the first word in a sentence, regardless of what that word is. The ergative construction is found in a number of languages. In the lexicon (monomorphemic) numbers frequently go no higher than 'three.'

AUSTRO-TAI

Today the Austronesian family is more widely dispersed throughout the world than any other language family, excluding Indo-European. Austronesian languages are spoken on the island of Madagascar off the east coast of Africa, on the island of Formosa off China's southeastern coast, throughout the Philippines and most of Indonesia (the country), on the Malay Peninsula of SE Asia, along the coast of New Guinea, and on most of the islands of Melanesia, Micronesia, and Polynesia. Except for New Guinea, Australia, and Tasmania,

Austronesian-speaking people inhabit every nook and cranny of Oceania. And yet the present domination of Oceania by the Austronesians is a comparatively recent phenomenon. Around 7,000 B.C., when the Melanesians and Australian Aborigines had already been occupying their parts of Oceania for over 20,000 years, there was not yet a single Austronesian speaker anywhere in Oceania. Rather the people who were to become the Austronesians were still living in what is today south central China, and they were speaking a language which we may call Austro-Tai. Some time before 5,000 B.C. the Austro-Tai speakers separated into two distinct groups. One was to remain in SE Asia, undergo a prolonged period of contact with the Chinese, and ultimately give rise to the modern Tai languages. The other group was to abandon the Asian mainland, and over the course of perhaps five millennia, give rise to the modern Austronesian languages. We may thus picture the general structure of the Austro-Tai stock as follows:



THE AUSTRO-TAI STOCK

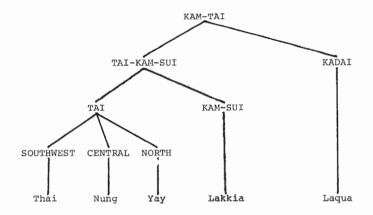
The Austro-Tai stock includes an estimated 550 languages, spoken by over 180 million people.

The <u>Kam-Tai</u> languages have traditionally been considered a branch of the Sino-Tibetan family. (More precisely, the Tai languages and the Chinese dialects were thought to comprise the Sinitic branch of Sino-Tibetan.) This proposed genetic affiliation

was postulated on the grounds that both Chinese and the Tai languages are monosyllabic, tonal, and share numerous cognates. However, we have already noted that structural similarities, such as monosyllables and tones, are not in themselves proof of genetic relationship. Structural traits are commonly assimilated to those of neighboring languages in many parts of the world, regardless of the genetic affiliation of the languages involved. Furthermore, the cognates shared by Chinese and Tai turn out, on closer inspection, to be loanwords, borrowed by one language from the other, and not reflexes of earlier proto-forms. Whereas the cognate words were formerly thought to have been borrowed from Chinese into Tai, recent research indicates that the direction of borrowing may well have been in the opposite direction, i.e. from Tai to Chinese.

The proposal that the Tai (and Kadai) languages are related to Austronesian, not Sino-Tibetan, was first advanced in the early 1940's. Within the last decade, however, the original proponent of an Austro-Tai relationship has uncovered substantial new evidence which establishes quite strongly an ancient affiliation between the Tai and Austronesian languages.

Approximately 50 Kam-Tai languages, with an estimated 30 million speakers, are spoken over much of the Indo-Chinese Peninsula in SE Asia. The structure of the Kam-Tai family is shown below:



THE KAM-TAI FAMILY

Four <u>Kadai</u> languages are spoken in S China (Kelao), along the Vietnam-China border (Lati, Laqua), and on the island of Hainan (Li) in the Gulf of Tonkin. Li, with a million speakers, is the most prominent Kadai language.

A half dozen <u>Kam-Sui</u> languages are spoken by a total of a million people living in S China near the intersection of Kweichow, Kwangsi, and Hunan Provinces. Kam (710,000) and Sui (130,000) are numerically the strongest.

To the south and west of the Kam-Sui languages, in southern China, lies the Northern branch of the Tai languages, containing some 18 languages and an undetermined number of speakers. Sandwiched in between the compact Northern branch and the diffuse Southwestern branch, and running along the Vietnam-China border, are the Central Tai languages (seven languages and a half million speakers). The Southwestern Tai languages are much more widespread than either other branch, being spoken in North Vietnam, Laos, Thailand, N Cambodia, N Burma, S China, and NE India. Thai (also known as Siamese) and Lao (both with 10 million speakers) are the national lan-

guages of Thailand and Laos, respectively. Other Southwestern Tai languages with over a million speakers include Northern Thai, Southern Thai, Shan and Yuan. The oldest Tai inscriptions date from the late 13th century A.D.

As indicated above, modern Thai shares a number of characteristics with neighboring Chinese dialects. A preference for monosyllables and a phonemic use of tone are two such features. In addition, Thai is characterized phonologically by a three way contrast in the stop series between voiceless unaspirated, voiceless aspirated, and voiced segments. Final consonants are usually either nasals or unreleased stops, and long vowels contrast with corresponding short vowels. With respect to morphology, derivation, but not inflection, is common. The preferred order of sentence constituents is SVO, and adjectives normally follow the noun they modify. The Thai lexicon includes numerous loans from a variety of languages (e.g. Chinese, Indonesian, Cambodian, Sanskrit, and Pali).

The Austronesian family of the Austro-Tai stock contains an estimated 500 languages spoken by approximately 150 million people. The genetic unity of several Austronesian (formerly called Malayo-Polynesian) languages was first noted by a Dutch scholar in the early 18th century. Since that time numerous additional Austronesian languages have been recognized, and the general structure of the family has undergone (and indeed continues to undergo) significant revisions. Even today there remain sharp disagreements among highly qualified scholars concerning the internal relationships holding between the various branches of Austronesian, so that the picture we shall sketch below should be considered tentative.

The Austronesian languages are divided into two branches, Western (or Indonesian) and Eastern (or Oceanic). There are approximately 200 Western Austronesian languages, spoken by a total of 150 million people. The Eastern branch contains 300 languages, but only a million speakers. The general distribution of the Western and Eastern Austronesian languages is shown

in the map below:



GEOGRAPHICAL DISTRIBUTION OF THE AUSTRONESIAN FAMILY

The Austronesian occupation of Oceania began some time after 5,000 B.C. in the area of south China, near the island of Formosa. By this date the future Austronesian speakers had separated from the future Tai speakers, and both dialects of Austro-Tai had already begun to diverge. situation which the proto-Austronesians faced in Oceania was something like the following. Micronesia and Polynesia were totally unoccupied. On the other hand, the Melanesians, speaking Indo-Pacific languages, had been occupying most of Melanesia for thousands of years. Recall that Indo-Pacific languages are still spoken, not only on New Guinea, but on other Melanesian islands as far east as the central Solomons and Santa Cruz. (Melanesians had not reached, however, either the New Hebrides or Fiji.) West of New Guinea Indo-Pacific languages are today spoken in the Lesser Sunda Islands (Timor, Alor), the Moluccas (Halmahera), and the distant Andaman Islands to the west of the Malay peninsula. Furthermore, it seems probable that before the Austronesian invasion the Melanesians occupied a much larger

portion of Indonesia (e.g. Malaysia, Borneo, Philippines) than they do presently. The geographical isolation of the Andaman Islanders from other Indo-Pacific groups would then be a relatively recent consequence of the Austronesian expansion, which has obliterated the vast majority of Indo-Pacific languages originally spoken in Indonesia. While the linguistic evidence for a more complete Melanesian occupation of Indonesia has apparently been erased by the Austronesians, the small darkskinned Negritos of the Philippines and the Malay Peninsula, though no longer speaking Indo-Pacific languages, would nonetheless constitute a physical remnant of a formerly more widespread Melanesian population. It seems reasonable to assume, therefore, that when the Austronesians left mainland Asia around 4,000 B.C. much of Indonesia and Melanesia was occupied by Indo-Pacific speakers, who were physically Melanesians. (Australia was long since occupied by the Aborigines, but since Austronesian contact with Australia was minimal or non-existent, we need not bring them into the picture.)

A final linguistic point must be made before we discuss the spread of Austronesian languages through the Pacific. It is an axiom of linguistics that the greater the linguistic diversity, the older the occupation of a territory must be. This means that the ancestral homeland of any linguistic group should be looked for in the area of greatest linguistic diversity. Within the Austronesian family there are at least two geographical areas where the linguistic diversity among languages is undisputably great. The first is at the western end of New Guinea extending into eastern Indonesia; the second lies in the area of western New Guinea and neighboring New Britain.

During the fourth millennium B.C. the proto-Austronesians left Asia, via Formosa, and spread southward, occupying first the Philippines and later most of the rest of Indonesia. In the process Austronesian languages, carried by light-skinned semi-Mongoloid peoples, began to displace the Indo-Pacific languages, spoken by the dark-skinned Melanesians. By 3,000 B.C.

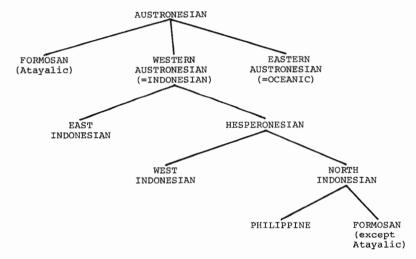
the original Austronesians had broken up into several distinct groups. One such group made its way to the area of east New Guinea-New Britain; it is from this group, which we may call proto-Oceanic, that the modern Eastern Austronesian languages derive. Another group established itself at an early date somewhere in eastern Indonesia (perhaps the Celebes). This latter group would in time give rise to most, if not all, of the modern Western Austronesian languages.

Now a fundamental question immediately arises with respect to the Western Austronesian branch in particular, and the Austronesian family in general. If the ancestral Austronesian homeland was located in south China in the area of Formosa, why is the greatest linguistic diversity found not here, but (at least for the Western branch) in southeastern Indonesia? Why is the linguistic diversity greatest in southern Indonesia rather in the earlier populated north, as the age-area hypothesis would lead us to expect? The answer appears to lie in a backward expansion of Austronesian speakers wherein the original north-south expansion was followed at some later date by a south to north retracing of the original path, during which traces of earlier Austronesian languages left behind by the original expansion, were in large part obliterated. According to this view the present genetic diversity found in southeast Indonesia represents only a portion of the genetic diversity which originally prevailed throughout all of Indonesia.

The evidence for this double dispersal (first from Formosa south to the Celebes, and secondly, from southeast Indonesia north to Formosa) of Austronesian languages consists chiefly in relic languages found around the perimeter of the Western Austronesian area. Although southeast Indonesia (with roughly half of the 200 Western Indonesian languages, some 40 of which are found on the Celebes) is unquestionably the point of greatest diversity among currently extant Western Austronesian languages, Austronesian languages of great antiquity are found in Formosa, in western Micronesia (Guam, Palau), and

on the island of Enggano, south of Sumatra. These languages, according to the double dispersal theory, are survivors of the original Austronesian expansion.

Having arrived at the Celebes by 3,000 B.C. the various dialects of proto-Western Austronesian diverged over the centuries into distinct languages which gradually expanded throughout Indonesia, first east to New Guinea and south to the Lesser Sunda Islands. These languages constitute the East Indonesian group of Western Austronesian. Eventually East Indonesian languages spread westward (through Borneo and southwest Indonesia) and then northward (through the Philippines), supplanting the Austronesian (and Indo-Pacific) languages which had been left behind during the original dispersal. Only in Formosa do we find remnents of both expansions; Atayal, and a couple of other languages, appear to be Austronesian languages left behind by the first (north-south) expansion; the other Austronesian languages belong to the final phase of the second (south-north) expansion. In addition, the languages of Palau and the Marianas on the western fringe of Micronesia also represent relics of the original expansion, preserved to the present day because they were never reached by the second expansion. We may then illustrate the structure of Western Austronesian as follows:



WESTERN AUSTRONESIAN

Of the languages spoken on Formosa (excluding Chinese, a recent arrival), Atayal, with 36,000 speakers, and two other languages, constitute an Atayalic group which is apparently distinct from the other Austronesian languages found on the island.

East Indonesian languages are spoken in western New Guinea, the Moluccan Islands, southern Celebes, and the Lesser Sunda Islands. While there are close to 100 different languages, most have few speakers; the numerically strongest, Buginese, is spoken by almost three million persons on the southern part of the Celebes.

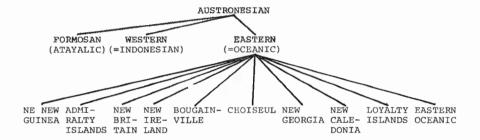
The populous <u>West Indonesian</u> languages are found in southern Borneo, Malaysia, Sumatra, Java, Madagascar and in enclaves in (South) Vietnam and Cambodia. Indonesian, with more speakers than any other Austronesian language (c. 80 million), is the official language of Indonesia. It is, however, spoken

as a first language by only a small percentage of Indonesians. most of whom speak Javanese, Sundanese, Madurese, or one of a number of other languages, as their maternal language. was adopted as the official language of the Republic of Indonesia in 1945, but had been widely used a lingua franca in Indonesia prior to that date. Except in name, Malay, the official language of Malaysia since 1967, is all but identical with Indonesian. It is spoken as a first language by six million people living on both the Malay Peninsula and neighboring areas of Sumatra. Other important West Indonesian languages spoken in the Republic of Indonesia include Javanese (45 million), Sundanese (15 million), Madurese (6 million), and Balinese (2 million). Several West Indonesian languages are spoken outside the geographical area called Indonesia. Four Chamic languages, with a total of 400,000 speakers, are found in (South) Vietnam and Cambodia. In addition, Malagasy is spoken on the island of Madagascar, off the east coast of Africa. It was apparently carried to that island (which the native Africans had never inhabited) by traders from Borneo around the time of Christ.

Seventy to 100 languages, spoken in the Philippines and the northern regions of Borneo and the Celebes, belong to the <u>Philippine</u> branch of North Indonesian. Tagalog is spoken as a first language by six million persons living in the region around Manila on the northern island of Luzon. In addition, it forms forms the basis of the official language of the Philippines, Pilipino, with an estimated 30 million speakers. Other numerically strong languages in the Philippines are Cebuano (9 million) and Ilocano (3 million). The <u>Formosan</u> branch of North Indonesian includes all the Austronesian languages spoken on Formosa, except the Atayalic group.

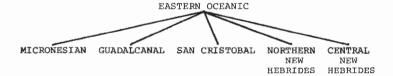
Let us now return to the other half of the Austronesian family, the Eastern (or Oceanic) branch, which, as we have already noted, contains as many as 300 languages spoken by a total population of only one million persons.

Following the original break-up of the Austronesian family around 4,000 B.C. one group of speakers made its way to the area of NE New Guinea-New Britain. After a certain period of common development (during which time specific characteristics of Oceanic languages developed), around 2,500 B.C., with the occupation of a number of surrounding islands, Eastern Austronesian began to disintegrate:



EASTERN AUSTRONESIAN

Speakers of Eastern Oceanic languages would in time populate all of Polynesia and most of Micronesia. After perhaps 500 years of evolution in the New Hebrides, Eastern Oceanic itself, around 2,000 B.C., split into several branches as islands to the north and west were occupied:



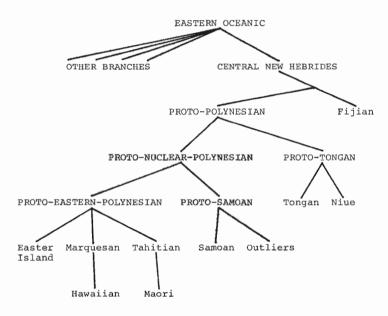
EASTERN OCEANIC

Of the 13 or so languages spoken in Micronesia, two are members of Western Austronesian (Palau and Chamorro, both spoken on the western fringe of Micronesia), and two more (Nukuoro and Kapingamarangi) are Polynesian (see below). The remainder belong to the Micronesian branch of Eastern Oceanic. Because linguistic diversity is greatest in eastern Micronesia (languages west of Truk in the central Carolines are little more than dialects of Trukese), it is generally believed that Micronesian languages have spread from the southeast corner of Micronesia to the west and north.

Around 1,500 B.C. Fiji, located on the eastern border of Melanesia, was occupied for the first time by people coming from the central New Hebrides, and speaking their version of Eastern Oceanic. Several centuries later one group of Fijians, the proto-Polynesians, moved eastward to Tonga, the first island in Polynesia to be reached. Here proto-Polynesian evolved in isolation for perhaps a thousand years, developing its specific characteristics, until finally, several centuries before the birth of Christ, a group of Tongans sailed north to the Samoan Islands and the settlement of Polynesia was underway. From Samoa Polynesians next (around 300 A.D.) inhabited the Marguesas Islands, almost 2,000 miles due east, and in time other Samoan speakers spread north and west occupying the Tokelau Islands, the Ellice Islands, as well as certain islands in Micronesia and Melanesia. By 500 A.D. Easter Island and Tahiti (in the Society Islands) had been reached from the Marquesas. final two stages in the occupation of Polynesia were the settlement of New Zealand (from the Cook Islands) around 800 A.D., and the settlement of Hawaii (from the Marquesas) shortly after 1,000 A.D. The settlements of both Hawaii and New Zealand, requiring the Polynesians to traverse over 2,000 miles of open ocean, attest to their advanced knowledge of navigation.

The tall light-skinned Polynesians present a sharply different picture from the short dark-skinned Melanesians, and by Melanesian I do not mean simply speakers of Indo-Pacific

languages. The vast majority of Eastern Austronesian languages (excluding the Polynesian and, in varying degrees, the Micronesian languages) are spoken by people with pronounced Melanesian features. Presumably the 'Melanesianization' of the Fijians took place after the proto-Polynesians had already departed for Tonga, and thus they do not share many of their distant cousins' racial characteristics. The structure of the Polynesian family, and its place within Eastern Oceanic, is shown in the diagram below:



THE POLYNESIAN FAMILY

The vast majority of Eastern Austronesian languages are spoken in Melanesia. Since the languages of Melanesia are not well known, it is impossible to determine their precise

number; however, a conservative estimate is 250. Polynesia and Micronesia, in contrast, contain only 16 and 13 languages, respectively. Most Austronesian languages found in Melanesia are spoken by small groups, ranging in size from several hundred to several thousand. An exception is Fijian, which is spoken by over 200,000 people.

Chamorro, with 50,000 speakers on Guam and other islands of the Mariannas, has more speakers than any other language found in Micronesia. Recall, however, that Chamorro is one of the two Western Austronesian languages found along the western fringe of Micronesia. The two Polynesian languages found in Micronesia, Nukuoro and Kapingamarangi, are numerically the weakest languages in Micronesia, with 400 and 700 speakers, respectively. Languages belonging to the Micronesian branch of Eastern Oceanic are all spoken by at least 2,500 people; Gilbertese (44,000), Trukese (26,000), and Marshallese (19,000) head the list.

The most populous Polynesian languages are Samoan (200,000), (New Zealand) Maori (100,00, all bilingual in English), Tongan (80,000), and Tahitian (66,000). Both Samoan and Tongan are national languages. Although Hawaii is thought to have had upwards of 300,000 people at the time of its first European contact in 1778, it is currently the home language of fewer than 300 people.

Austronesian languages are quite diverse, and it is thus difficult to make general statements regarding the family as a whole. Phonetic change appears to have operated particularly slowly in Oceania, with many words persisting almost unchanged for millennia. Morphophonemic variation tends to be minimal. Both noun and verb morphology is usually simple, and reduplication in the verb root occurs with a variety of functions. In the pronominal system, inclusive and exclusive forms of the lst person plural pronoun are often distinguished. Sentence structure generally follows the order SVO, though Polynesian languages prefer VSO. Many roots may be used either as nouns or

verbs. As a rule Western Austronesian has been more conservative than Eastern Austronesian, both in phonology and morphology.

5.5 NORTH AMERICA

Like Oceania, the New World (i.e. North and South America) was first inhabited by man at a relatively recent date. Whereas fossil remains of man date back several million years in the Old World (particularly Africa), man's arrival in North America, and subsequently South America, can be measured in terms of millennia. Although there is no universally accepted date for man's first appearance in the New World, estimates generally fall between 20,000 and 50,000 B.C. Recent archaeological finds, however, suggest the possibility of an even earlier arrival, perhaps 70,000 B.C.

While the precise date remains obscure, it is generally agreed that the first men to enter the New World did so by crossing the Bering Strait from Asia, most probably at a time during the last ice age when Asia and the New World were still connected by a land bridge. Furthermore, it is clear that these early Americans entered North America in a number of waves; at least three different migrations appear certain, but there may well have been more. The first migration may have taken place around 40,000 B.C. From this first wave of immigrants are descended the vast majority of American Indians, with their remarkably uniform physical characteristics: (1) straight black hair and dark eyes, (2) swarthy reddish brown skin, (3) little body hair, (4) prominent cheek bones, and (5) a tendency to the Mongoloid eyefold, giving them an appearance which may best be described as 'proto-Mongoloid.'

The second major migration perhaps occurred around 25,000 B.C., and brought with it people with slightly more pronounced Mongoloid features. The modern representatives of this second migration are those Indians who today speak languages belonging to the Na-Dene family (e.g. the Navajo of the southwestern

United States).

The final migration took place as recently as 3,000 B.C. and brought with it the ancestors of today's Eskimos and Aleuts. The pronounced Mongoloid characteristics of the Eskimos (and Aleuts) sharply distinguish them from all other native Americans. In summary, then, the three major migrations from Asia to the New World were:

- 1. 'GENERAL INDIAN': 40,000 B.C.
- 2. NA-DENE: 25,000 B.C.
- 3. ESKIMO-ALEUT: 3,000 B.C.

In any event, by the time the first Europeans reached the New World around 1500 A.D. all of North and South America had long since been inhabited, and great linguistic diversity had developed. The population of the New World at the time of Columbus' arrival is obviously very difficult to determine and estimates run from 10 to 100 million. Most of this population was concentrated in Central and South America.

It is estimated that there were upwards of 380 distinct Indian languages spoken in pre-Columbian North America, with 300 of these spoken north of what is today Mexico, and approximately 80 spoken in Central America. Today there are 200 Amerindian languages still spoken north of Mexico, but many of these are on the verge of extinction. The numerically strongest, with 120,000 speakers, is Navajo. Central America, with around 70 languages still extant, has many languages with large numbers of speakers. Nahuatl (also called Aztec) and Quiche are spoken by close to a million persons each, and Yucatec, Mam, Kekchi, Mixtec, Zapotec, and Otomi all have over a quarter million speakers.

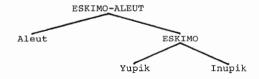
Most North American Indian languages belong to one of the following ten language families:

ESKIMO-ALEUT
NA-DENE
MACRO-ALGONQUIAN
SALISH
WAKASHAN
MACRO-SIOUAN
PENUTIAN
HOKAN
AZTEC-TANOAN
OTO-MANGUEAN

Some scholars who have studied many Indian languages believe that ultimately all the languages of North and South America (excluding Eskimo-Aleut, and possibly also Na-Dene) are related, but this 'intuition,' which is quite plausible from what we know of the peopling of the New World, cannot at the present time be substantiated on the linguistic evidence alone. Whatever relationships there may be between the language families listed above (and those in South America), a more comprehensive classification must await further research.

ESKIMO-ALEUT

The Eskimo-Aleut family, with five languages and 83,000 speakers, is the northernmost of the New World language families. Furthermore, it is the only language family with speakers in both Asia and North America. This family comprises two branches:



THE ESKIMO-ALEUT FAMILY

The <u>Aleut</u> branch consists of a single language. Formerly spoken by over 20,000 people, its numbers are today greatly reduced, with around 500 speakers in the Aleutian Islands, and another 100 on the Commander Islands off the northeast coast of Asia.

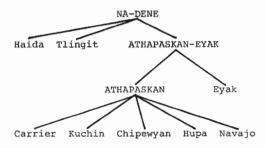
Eskimo languages are spoken along the Arctic coast from Greenland across northern Canada and Alaska into Siberia. Three mutually unintelligible Yupik dialects are spoken in Alaska (south of the Norton Sound) by 20,000 persons. The remaining 60,000 Eskimos speak mutually intelligible dialects of the Inupik language; these dialects stretch from Greenland to Siberia. The Eskimo language is most vigorous in Greenland (where it is known as Greenlandic), and is used in schools, churches, and on radio. An estimated 43,000 Eskimo speakers live in Greenland, 16,000 in Arctic Canada, 23,000 in Alaska, and less than 1,000 on the Chukchi Peninsula in NE Asia.

Since the Eskimo-Aleuts were almost certainly the last aboriginees to migrate to the New World (c. 3,000 B.C.), some scholars have sought to establish more extensive relations with other Asian groups. A connection with certain Paleosiberian peoples has at times been proposed, but is not generally accepted.

Phonologically, Eskimo and Aleut are characterized by simple vowel systems (often just three vowels-i,u,a-and a length contrast) and voiceless uvular stops. Stress depends on syllable length and is never phonemic. Eskimo has many suffixes, but almost no prefixes. Nouns often exhibit a distinction between singular, dual, and plural, and there is a rich system of demonstratives, with up to thirty forms. The number of word-stems may be relatively small (e.g. 2,000 in West Greenlandic), but this is compensated for by an extensive system of derivation. Eskimo-Aleut languages are 'polysynthetic'; this means that what in other languages might constitute several different sentence elements may be combined in a single word.

NA-DENE

We mentioned above that speakers of Na-Dene languages, who are physically distinct from other native Americans, are thought to have migrated to the New World some time after the first wave of migrations, though still well before the arrival of the Eskimos. Nineteen of the 22 currently surviving Na-Dene languages belong to the important Athapaskan family:



THE NA-DENE FAMILY

The membership of Haida and Tlingit in Na-Dene is still questioned by some linguists. Tlingit is spoken by roughly 1,500 persons in the area of the Alaskan panhandle; Haida has 200 speakers, half of them living on the Queen Charlotte Islands off the coast of British Columbia, the other half along the Alaskan coast to the north. Eyak, which is coordinate with the whole Athapaskan family, had only three surviving speakers in 1972. It was formerly spoken along the Alaskan coast, north of the panhandle. Athapaskan languages are found in three different parts of North America: (1) the Western Subarctic (most of Alaska and northwest Canada), (2) the Northwest Coast of California, and (3) the Southwest United States (Arizona, New Mexico, west Texas). The greatest diversity within the Na-Dene family is found in Alaska, and it is therefore this region which is considered to be the ancestral homeland of all the Na-Dene lan-

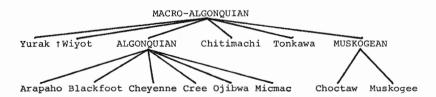
guages. The Athapaskan languages spoken along the California coast (which are now, for the most part, either extinct or moribund) are more divergent from the Western Subarctic languages than are the Apachean languages of the American Southwest.

Of the approximately 136,000 Athapaskan speakers, the vast majority (c. 120,000) speak Navajo. Other Athapaskan languages with a substantial number of speakers are Chipewyan (5,000), Carrier (1,500), and Kuchin (2,000), all located in Canada.

Phonological characteristics of the Na-Dene family include (1) nasal vowels, (2) long vowels (including long nasal vowels), (3) ejectives (and in some languages preglottalized nasals and glides), (4) a three-way stop contrast between voice-less aspirates, voiceless (or voiced) unaspirates, and ejectives, (5) labialized velars, and (6) voiceless laterals. In addition, several Athapaskan languages (e.g. Navajo, Chipewyan) are tonal. Prefixes are commonly used to indicate the tense and aspect of verbs, but otherwise suffixes are more common.

MACRO-ALGONOUIAN

The Macro-Algonquian stock contains approximately 21 languages and 150,000 speakers. Formerly spoken over much of the eastern two thirds of North America (from the Hudson Bay to the Gulf of Mexico, and from the Atlantic Ocean to the Rocky Mountains), Macro-Algonquian comprises two important families and a number of isolated languages:



THE MACRO-ALGONQUIAN FAMILY

Yurak and Wiyot (the latter now extinct) were both spoken along the northwest coast of California, over a thousand miles west of any other Algonquian speaking area. Despite their geographical proximity it appears that they were not more closely related to each other than either was to any other language in Macro-Algonquian. The approximately one dozen Algonquian languages constitute the heart of Macro-Algonquian, and occupy most of its territory. Cree (62,000), and Ojibwa (50,000) are numerically the strongest; other Algonquian languages are Arapaho, Blackfoot, Cheyenne, Menomini, and Micmac.

The four surviving Muskogean languages are found in the southeastern United States (Georgia and Alabama). Choctaw (12,000) represents an Eastern branch, and Muskogee (10,000), which is also called Creek, is one of three languages in the Western branch. A number of isolated languages belonging to Macro-Algonquian (e.g. †Tunica, Chitimachi, Tonkawa) are (or were) spoken to the west of the Muskogean family.

Many Macro-Algonquian languages are, like their Eskimo neighbor to the north, polysynthetic, combining several sentence elements in a single word. Phonologically, these languages are quite different from languages found in western North America, lacking almost entirely the glottalized consonants, voiceless laterals and uvular stops which are so common on the west coast. Long vowels are common, and long consonants are found in several languages. A number of languages lack laterals and vibrants, and a voice contrast among stops is found only sporadically.

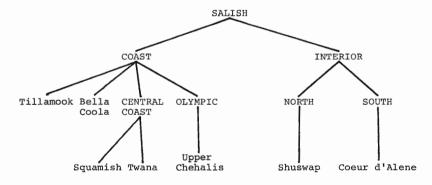
Since Algonquian languages occupied much of the eastern seaboard, they were the first to be encountered by British and French settlers. They were also among the first to become extinct. Mohican, Massachusetts, and Powhatan were wiped out early. Several Algonquian tribes, which managed to survive the early years of the European invasion, later had their land confiscated and were driven westward in forced marches to reservations on some of the most inhospitable land in North America. It was

practices such as these which explain why the Delaware language is today spoken in Oklahoma, and Alabaman speakers now live in Texas.

SALISH

The Pacific Coast of North America is one of the most diverse linguistic areas in the world; from the southern coast of Alaska to southern California, languages belonging to nine different families are found: Eskimo-Aleut, Na-Dene, Penutian, Salish, Wakashan, Chimakuan (now reduced to a single language isolate), Macro-Algonquian, Hokan, Aztec-Tanoan. In fact, there is (or rather was) greater diversity in California alone than in all of Europe.

The Southern portion of British Columbia and neighboring Washington state contain several small language families, the most extensive of which, in geographical spread, is the Salish family. Around 16 Salish languages are still spoken by some 7,000 persons; these languages are divided into two branches by the Cascade Mountains. East of the Cascades we find the Interior branch; west of the Cascades lie the Coast Salish languages:



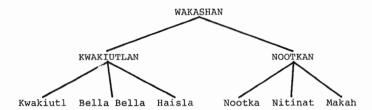
THE SALISH FAMILY

None of the Salish languages currently has more than 2,000 speakers, though several (e.g. Comox, Shuswap, Thompson, Spokane) have at least 1,000. Many are on the verge of extinction (e.g. Tillamook, Lower Chehalis, Upper Chehalis, Twana, Puget Sound Salish, Clallam, Haisla).

Salishan languages share many linguistic features with neighboring language families of the northwest coast, the most unusual of which is a total lack of nasal consonants in several languages. Although nasal consonants are found in practically every language in the world, two Salishan languages (Twana, Puget Sound Salish), two Wakashan languages (Makah, Nitinat), and the sole surviving Chimakuan language (Quileute) lack nasals entirely, except in loans and other marginal forms. In these languages the original nasal consonants have become voiced stops. In addition, Salishan languages share other phonological characteristics with (unrelated) neighboring languages: (1) voiceless laterals and lateral affricates, (2) uvular stops, (3) labialized velar and uvular stops, (4) a lack of vibrants, and (5) ejectives. Salishan languages are extraordinarily rich in stops made in the velar-uvular region. Whereas English has only two distinctive sounds produced in this area of the mouth (k,g), Salishan languages may have as many as ten $(k,k^{W},k^{?},k^{?W},g,g^{W},q,q^{W},q^{?},q^{?W})$.

WAKASHAN

Six Wakashan languages, with a total population of roughly 4,000 people, are spoken on Vancouver Island and the adjacent coast of British Columbia. These six languages are divided into two branches:



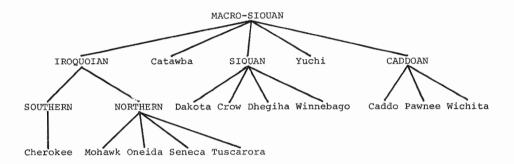
THE WAKASHAN FAMILY

Nootka (with 1,800 speakers) and Kwakiutl (1,000) are numerically the strongest; Makah borders on extinction.

Wakashan languages are surrounded by Salishan languages and share with them many linguistic features. In addition to the lack of nasal consonants mentioned above, Wakashan languages share the following traits with the Salish family: (1) a lack of vibrants, (2) glottalized consonants (stops, affricates, nasals, liquids, and glides), (3) voiceless laterals and lateral affricates, (4) labialized velars and uvulars, and (5) relatively simple vowel systems. In addition, Nootka has developed two pharyngeal fricatives.

MACRO-SIOUAN

The Macro-Siouan stock, with approximately 18 languages and 38,000 speakers, is made up of three important families and a number of isolated languages:



THE MACRO-SIOUAN FAMILY

Macro-Siouan languages are spoken in three large 'islands' (two on the eastern seabord and a very large one covering much of the central United States), all three of which are surrounded almost entirely by languages of the Macro-Algonquian group. The Siouan languages are central to the Macro-Siouan stock in the sense that Siouan is closer to both Iroquoian and Caddoan than these later two are to each other.

The <u>Iroquoian</u> family has two branches. The Northern branch contains five languages and was originally spoken in the area of Lake Erie, Lake Ontario, and northeast along the Saint Lawrence River. Northern Iroquoian languages at one time covered most of what is today New York state, Pennsylvania, northern Ohio, and the adjacent regions of Canada. Seneca, Mohawk, and Oneida still have over a thousand speakers each.

The Southern branch of Iroquoian, which contains just one language, Cherokee, was originally spoken throughout the Blue Ridge Mountains and eastward to the Atlantic Ocean, occupying the area which is today Virginia, North Carolina, and South Carolina. Most of the 10,000 surviving speakers now live in Oklahoma, having been driven from their ancestral homeland during the mid 19th century.

The Siouan family consists of half a dozen languages

spoken in the central and north central United States (western Montana, both Dakotas, Nebraska, southern Minnesota, Iowa, and Missouri). Dakota (with several distinct dialects) has between 15 and 20 thousand speakers, and Crow, Dhegina, and Winnebago over 1,000 each.

The <u>Caddoan</u> family, formerly spoken in the Dakotas, Kansas, Oklahoma, Arkansas, and northern Louisiana and Texas, is today reduced to just three languages, all with fewer than 500 speakers. Caddo and Pawnee have approximately 400 each, while Wichita has half that number.

The isolated languages Catawba and Yuchi were both spoken in the southeastern United States, but have today only minimal numbers of speakers.

Phonologically, Macro-Siouan languages are characterized by nasal vowels, long vowels (and sometimes long nasal vowels), and a lack of vibrants, laterals, or both. Glottalized consonants are found in a few languages but are not general. One striking peculiarity of several languages (e.g. Seneca, Oneida, and Kitsai) is a total lack of labial stops, fricatives, and nasals.

PENUTIAN

Penutian is the only language family with members in North, Central, and South America. Its 58 languages are spoken by some 2.6 million people; however, most of the Penutian languages spoken in the United States are moribund. The Penutian family comprises a dozen branches and a half-dozen isolated languages (the geographical location and number of speakers follows each branch or isolate):

Tsimshian (British Columbia; 3,000) SAHAPTIN-NEZ PERCE (Idaho; 3,500) CHINOOK (Washington/Oregon; 100) KALAPUYA (Oregon; 2) YAKONAN (Oregon; 2) Coos (Oregon; 10)

Klamath (California/Oregon; 150)

WINTUN (California; 100)

MAIDU (California; 80)

MIWOK (California; 70)

YOKUTS (California; 20)

Zuni (New Mexico; 3,500)

TOTONACAN (S Mexico; 68,000)

Huave (S Mexico; 7,000)

MIXE-ZOQUE (S Mexico; 70,000)

MAYAN (S Mexico; 2.5 million)

CHIPAYAN (Bolivia; 1,000)

Araucanian (Chile: 200,000)

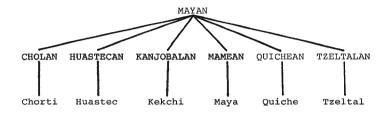
The most northerly Penutian language is the isolate Tsimshian, spoken by 3,000 persons in British Columbia, just south of the Alaskan panhandle.

Eight branches and two Penutian isolates are found along the Pacific coast from southern Washington state southward through central California. The Sahaptin-Nez Perce and Chinook branches contain just two languages apiece, and the Kalapuya and Yakonan branches each have only a single surviving member.

All four of the California branches have fewer than 100 speakers remaining, and <u>Yokuts</u> has only one surviving language. The isolate Zuni is spoken on the western border of New Mexico.

The Penutian languages spoken in Central and South America are far more vigorous than their cousins in the United States. The Totonacan and Mixe-Zoquean branches have 70,000 speakers each, and the important Mayan family contains some 25 languages and over two and one-half million speakers. It should be noted that the Mayans were the only people in the New World who had developed a system of writing prior to European contact. The six branches of the Mayan family, with a

representative language for each, are shown below:



THE MAYAN FAMILY

The Mayan languages with the most speakers are, in descending order: Maya (350,000), Quiche (300,000), Mam (285,000), Kekchi (250,000), Cakchiquel (225,000). The Totonacan languages are spoken on the Gulf coast of eastern Mexico; Mixe-Zoque languages are found in the neck of southern Mexico. The Mayan languages occupy the Yucatan Peninsula.

In South America we find the <u>Chipayan</u> branch (three languages, one extinct) in SW Bolivia, and Araucanian (a single language with 200,000 speakers) several hundred miles south of Santiago, Chile. One linguist has classified the Chipayan languages and Araucanian as members of Andean-Equatorial, a language family found primarily in South America (see section 5.6 below), thus raising the problem of the relationship between languages (and language families) of North and South America.

The Penutian family is so widespread and diverse that it is difficult to find many traits which are shared by most of its languages. Nevertheless, long vowels are common and glottalized consonants (both ejectives and implosives) are found along the northwest coast of the United States and in the Mayan family in Mexico. Except for the Mayan branch, Penutian languages often lack vibrants.

HOKAN

Six families and four isolated languages comprise the Hokan stock. All told there are approximately 20 languages and 37,000 speakers. These languages are still spoken in northern California; southern California, northwest Mexico, and western Arizona; and in southern Mexico and possibly NW Honduras. They were formerly also found along the central California coastline and NE Mexico. Most of the Hokan languages spoken in the United States are moribund. Arranged from north to south, the six Hokan families and four isolates are:

Karok (NW California; 100)

PALAIHNIHAN (NE California; 100)

SHASTAN (N California; 10)

POMO (WC California; 150)

Washo (Lake Tahoe; 100)

YUMAN (S California/W Arizona/NW Mexico; 3,000)

Seri (NW Mexico; 200)

TLAPANECAN (SW Mexico; 24,000)

TEQUISTLATECAN (SW Mexico; 9,000)

Jicaque (NW Honduras; possibly extinct)

The <u>Palaihnihan</u> and <u>Shastan</u> branches have just two and one language, respectively; <u>Pomo</u> has four or five, all with minimal numbers of speakers. The <u>Yuman</u> family has two branches: Delta-Californian and Pai. Mohave (also called Yuma) is the most vigorous Hokan language in the United States, with 2,000 speakers living in western Arizona along the Colorado River. Several hundred Seri speakers are still found along the NW coast of Mexico, opposite Baja California. Along the Pacific coast of southern Mexico Tlapanec is spoken by 24,000 people, and two <u>Tequistlatecan</u> languages have perhaps 5,000 speakers each. Some linguists consider Tlapanec to be a member of the Oto-Manguean family (see below).

Hokan vowel systems often possess five short and five long vowels. Glottalized consonants are found in several languages but are not characteristic of the family as a whole; usually a single voiceless series of stops is found. A voiceless uvular stop, in contrast with a voiceless velar stop, is common. Most languages have at least a plain lateral, but voiceless laterals and palatal laterals are also found in a number of languages.

AZTEC-TANOAN

The Aztec-Tanoan stock consists of the geographically restricted Tanoan family (4 languages with a total of 8,000 speakers) and the far-flung Uto-Aztecan family, with its two-dozen languages and over a million speakers spread over much of the southwestern United States and northern Mexico. However, the vast majority of Uto-Aztecan speakers are found in Mexico, where a single language, Nahuatl (also called Aztec), has close to a million speakers.

Three of the four Tanoan languages are found in central New Mexico; Tiwa and Tewa have approximately 2,000 speakers each, while the third, Towa, has closer to 1,000. The other Tanoan language, Kiowa, is spoken in Oklahoma by 2,000 people.

The Uto-Aztecan family is made up of four branches and a couple of isolates:

NUMIC (Nevada/S Idaho/Utah/SW Colorado/N Texas; 10,000)
TAKIC (S California; 200)
Hopi (N Arizona; 3,000)
Tubatulabal (SC California; 10)
SONORAN (S Arizona/N Mexico; 54,000)
AZTECAN (C Mexico; 1 million)

The most populous Numic languages are Shoshone (5,000) and Northern Paiute (2,000), spoken in N Nevada and S Idaho, respectively. All of the Takic languages except Luiseño are

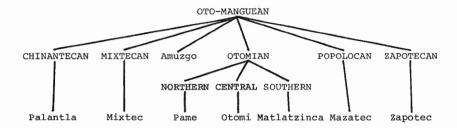
moribund, and even Luiseño has only a hundred or so speakers remaining. The Sonoran branch, centered in N Mexico, has a number of languages with over a thousand speakers; in descending order, they are: Tarahumar (60,000), Pima (18,000), Yaqui (10,000), Huichol (5,000), Cora (3,700), Tepehuan (1,700).

By far the most important branch of Uto-Aztecan, in terms of number of speakers, is Aztecan. Nahuatl, with several dialects, is spoken in the central portion of Mexico by around one million persons. Pipil, another Aztecan language, has perhaps 2,000 speakers in various Central American countries.

The Aztec-Tanoan family is quite diverse. Tanoan languages have nasal vowels, while in Uto-Aztecan languages long vowels are common. A few languages are tonal. Aspirated stops, glottalized stops, voiced stops, labialized stops, and long stops are all attested, but none could be considered a general characteristic of the entire family. Uto-Aztecan languages often use reduplication to form plurals.

OTO-MANGUEAN

Oto-Manguean is the only family whose languages are spoken exclusively in Central America, for the most part in central Mexico. Approximately 30 different languages are still extant, with a total population of over a million people. Each of the five branches of Oto-Manguean contains around a half-dozen languages; Amuzgo, with 12,000 speakers, is an isolate, though some linguists consider it closest to the Mixtecan branch:



THE OTO-MANGUEAN FAMILY

In addition, two Manguean languages, now extinct, were formerly spoken in Mexico, Nicaragua, Honduras, and Costa Rica.

Many of the modern Oto-Manguean languages still have large numbers of speakers. The top six, ranked in decreasing order, are: Otomi (300,000), Zapotec (300,000), Mixtec (250,000), Mazatec (85,000), Mazahua (80,000), Chatino (20,000).

Most Oto-Manguean languages are tonal, and nasal vowels are very common. Some languages exhibit a voice/voiceless contrast among stops, while others have only a voiceless series. In several languages bilabial stops occur only marginally. Syntactically, Oto-Manguean languages are often characterized by a verb initial sentence structure.

5.6 SOUTH AMERICA

South America was originally populated by American Indian tribes moving south from North America. Archaeological evidence indicates man's presence in South America by at least 15,000 B.C., and his first arrival may well have been even earlier. In any event, by the time the first European explorers arrived the entire continent was inhabited by between ten and twenty million persons, speaking a large number of diverse languages. Today Indian languages are spoken by an estimated 11.2 million people.

Together with New Guinea and its surrounding islands,

South America represents, from the perspective of linguistics, one of the least documented areas in the world. Estimates at the number of distinct Indian languages fall in the range of 1,000-2,000; however, only some 600 are actually attested, and 120 of these are now extinct. South American Indian languages are divided among three language families:

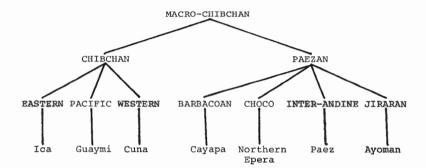
MACRO-CHIBCHAN
GE-PANO-CARIB
ANDEAN-EQUATORIAL

Macro-Chibchan languages are spoken in the southern portion of Central America, and in scattered islands of speakers throughout NW South America. The other two families, Ge-Pano-Carib and Andean Equatorial, both have a tremendous distribution, extending the length and breadth of South America.

MACRO-CHIBCHAN

The Macro-Chibchan family forms a bridge between the languages of Central and South America, running from Honduras through Nicaragua, Costa Rica, Panama and then fanning out into NW South America, where Macro-Chibchan languages are frequently surrounded by those of the Ge-Pano-Carib and Andean-Equatorial stocks. In South America speakers of Macro-Chibchan languages are found in Colombia, Ecuador, Bolivia, Venezuela, and Brazil.

In addition to a number of isolates, Macro-Chibchan languages are divided into two large families, <u>Chibchan</u> and Paezan, which contain three and four branches, respectively:



THE MACRO-CHIBCHAN FAMILY

Several languages have speakers who number in the thousands, though probably none has more than 25,000: Cuna (Panama; 21,000), Paez (Colombia; 20,000), Guaymi (Panama; 15,000), Northern Epera (Colombia; 11,000), Southern Epera (Colombia; 9,000), Cayapa (Ecuador; 4,000), Itonama (Bolivia; 2,000).

Like many South American languages, those of the Macro-Chibchan phylum often have nasal vowels. In addition, a voice contrast is common.

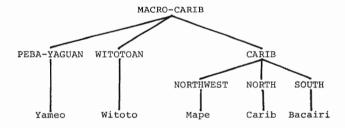
GE-PANO-CARIB

Although Ge-Pano-Carib has relatively few speakers (c. 1.5 million), its geographical spread is enormous, extending from the Lesser Antiles to S Argentina and spanning the continent from the Pacific to the Atlantic Ocean. In many areas, however, Ge-Pano-Carib languages are intricately intertwined with those of the Macro-Chibchan and Andean-Equatorial stocks. Four families of unequal size comprise Ge-Pano-Carib:



THE GE-PANO-CARIB STOCK

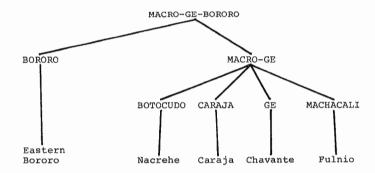
The Macro-Carib family, containing a known 60 languages and 50,000 people, is centered in Colombia and northern Brazil, but is also found in Peru, Venezuela, and the Guianas. In addition to the large Carib family, two smaller families are contained in Macro-Carib:



THE MACRO-CARIB FAMILY

A few Peba-Yaguan and Witotoan languages are found in NE Peru and SE Colombia, respectively. The large and widespread Carib family (c. 50 languages) is usually divided into three branches on a geographical basis. Carib languages are spoken in Trinidad, Colombia, Venezuela, the Guianas, and Brazil.

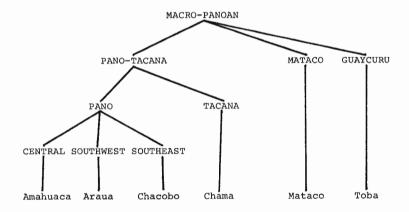
 $\underline{\text{Macro-Ge-Bororo}} \text{ consists of a small Bororo group and} \\ \text{a large Macro-Ge family consisting of four branches:}$



THE MACRO-GE-BORORO FAMILY

These languages are spoken chiefly in eastern Brazil, but have extensions into both Bolivia and Paraguay.

The small <u>Nambicuara</u> family (3 languages) is located in southern Brazil. Spoken over a vast area, east of the Andes, from northern Peru to Paraguay (and formerly all the way into Uruguay), <u>Macro-Panoan</u> contains three families:



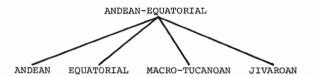
THE MACRO-PANOAN FAMILY

The Pano-Tacana family extends from NE Peru southward into N Bolivia. The Mataco and Guaycuru families are both spoken in N Argentina, Paraguay, and adjacent areas of Bolivia and Brazil.

Several phonological features are widely dispersed among the languages of the Ge-Pano-Carib stock. Nasal vowels and long vowels are both found, but many languages have neither. The high back unrounded vowel /w/ is common, either alone or in contrast with /u/. Lateral consonants are often lacking, and a few languages lack both laterals and vibrants. A voice contrast among stops is widespread, and phonemic use of tone occurs sporadically.

ANDEAN-EOUATORIAL

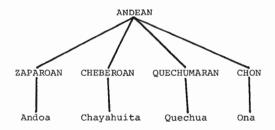
Like the Ge-Pano-Carib stock, Andean-Equatorial enjoys a broad geographical distribution throughout South America, though in many areas it is interspersed with languages from the other two South American phyla. While many of its languages have been wiped out in the past 500 years, Andean-Equatorial languages were originally spoken on most of the islands of the West Indies, parts of the Florida Peninsula, and throughout much of South America, particularly along the Pacific coast and the Amazon River, with smaller groups of speakers also found along the Atlantic coastline as far south as what is today In addition, there are many isolated islands of speakers sprinkled over the continent. In general, the distribution of Andean-Equatorial coincides with the most densely populated areas of South America, and several languages have speakers who number in the millions. There are perhaps a total of ten million speakers of Andean-Equatorial languages. The Andean-. Equatorial phylum consists of four groups:



THE ANDEAN-EQUATORIAL STOCK

Andean contains four branches, including the large and important Quechumaran family. Nine different families make up the Equatorial stock; two of these families, Arawakan and Tupi, have an enormous areal spread. Macro-Tucanoan includes two small families in addition to the more substantial Tucanoan family. Jivaroan represents a single family with only a few languages.

The four families which comprise the Andean stock are shown below:



THE ANDEAN FAMILY

The Zaparoan family was formerly widely spoken in N Peru and neighboring Ecuador, but most of these tribes are today extinct. The Cheberoan family, also with relatively few speakers remaining, is located in north central Peru. The Quechumaran family was originally restricted to the northern highlands of Peru. However, during the expansion of the Inca empire in the 15th century A.D. Quechua was carried northward into Ecuador and southward into

S Peru and Bolivia. Today Quechua, with numerous dialects (some of which are no longer mutually intelligible), has over six million speakers. Another Quechumaran language, Aymara, was partially overrun by the Inca expansion, but still maintains over a half million speakers. The Chon family lies far to the south of the other Andean families, in what is today the southern third of Argentina. Ona was formerly spoken at Tierra del Fuego, but there were only 50 speakers surviving in the 1940's.

The vast <u>Equatorial</u> stock contains nine different families, of which Arawakan and Tupi are, in terms of number of speakers and geographical spread, the most important:

EQUATORIAL: ARAWAKAN (N South America/West Indies)

TUPI (Brazil)

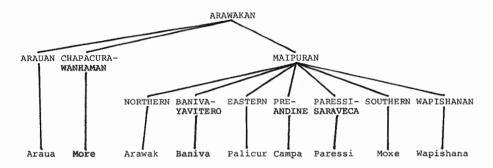
TIMOTE (NW Venezuela)
SALIVAN (SC Venezuela)

GUAHIBO-PAMIGUA (E Colomgia/W Venezuela)

MOCOA (SW Colombia)
CARIRI (EC Brazil)
YURACAREAN (C Bolivia)

ZAMUCOAN (S Bolivia/N Paraguay)

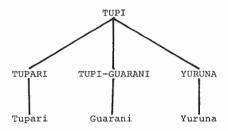
At least 100 languages are included in the large Arawakan family, which is divided into two small branches and the large Maipuran family:



THE ARAWAKAN FAMILY

The Arauan branch of Arawakan contains around nine languages and is spoken in W Brazil; the Chapacura-Wanhaman branch, with 11 languages, is located in NE Bolivia and adjacent parts of Brazil. Roughly 82 languages make up the Maipuran group, with half of them belonging to the Northern branch and another quarter to the Pre-Andine branch. Arawakan languages were formerly spread from the southern tip of Florida and the East Indies as far south as the present Paraguay-Argentina border. On an east-west axis Arawakan extended from the mouth of the Amazon River westward to the foothills of the Andes. We might note that the first language encountered by Europeans, Taino, belongs to the Arawakan group. It was one of the first languages to become extinct.

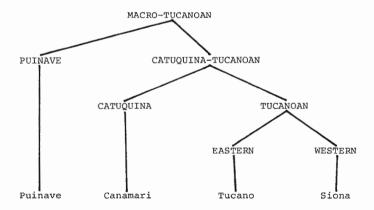
The other important family in the Equatorial stock is Tupi:



THE TUPI FAMILY

Several other branches of Tupi are now extinct. Most of the 50 Tupi languages belong to the Tupi-Guarani branch. Furthermore, a few Tupi-Guarani languages have a sizable number of speakers; Guarani itself has close to two million, mostly in Paraguay. Almost all Tupi languages are spoken south of the Amazon.

The third family in the Andean-Equatorial stock is Macro-Tucanoan:



THE MACRO-TUCANOAN FAMILY

The small Puinave branch is spoken on the Colombia-Brazil border; the Catuquina branch contains around 15 languages and is found in W Brazil and along the Colombia-Peru border. Eastern Tucanoan languages are spoken on the Colombia-Brazil border; Western Tucanoan languages, in N Peru, Ecuador, Colombia, and Brazil. There are approximately 30 languages and 10,000 speakers in the Tucanoan group.

The fourth and final branch of Andean-Equatorial is the small <u>Jivaroan</u> family, with three languages in the area of N Peru and SE Ecuador, and one language (Yaruro) in S Venezuela. Jivaro itself has 20,000 speakers, and Yaruro, 5,000.

Although the large Andean-Equatorial stock is quite diversified, several phonological features appear frequently. Nasal vowels and long vowels are both common, and laryngealized vowels are also attested. Furthermore, in addition to a contrast between oral vowels and nasal vowels, some languages (e.g. Guarani) contrast oral and nasal morphemes, where all the vowels of a morpheme must be either oral or nasal. Tone appears sporadically. Voiced stops, aspirated stops, and glottalized stops are all found, but quite frequently a language will have a single voiceless series. Many languages lack laterals, and a few lack vibrants as well.

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EB: Encyclopaedia Britannica

CTIL: Current Trends in Linguistics

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PART II



LANGUAGES OF THE WORLD

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ABKHAZIAN (Abaza) [Lomtatidze 1967b] [Caucasian: North: Northwest]
            [SW USSR (Abxaz SSR; 90,000]
            kh k? kh j k? j kh w k? w qh q? qw q? j q? w ?
                                                   phonemic stress
                                                   SOV/AN
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ABKHAZIAN (Abzhui) [Lomtatidze 1967a] [Caucasian: North: Northwest]
            [SW USSR (Abxaz SSR); 90,000]
ph p? th t? thw t?w kh k? khJ k?J khw k?w q? q?J q?w
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      [Shaw & Neuenswander 1966] [Penutian: Mayan: Quichean]
            [C Guatemala; 12,000]
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ACHUMAWI (Ajumawi) [Olmsted 1966] [Hokan: Palaihnihan] [N California; 40]
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ADZERA (Kaiapit) [Holzknecht 1973] [Austro-Tai: Austronesian: Oceanic:
              NE New Guinea] [NE New Guinea; 17,600]
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AFRIKAANS
             [Pienaar & Hooper 1948] [Indo-European: Germanic: West]
               [South Africa; 2.5 million]
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       [Magometov 1967] [Caucasian: North: Northeast: Lezghian]
               [SW USSR (Daghestan SSR); 6,700]
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AINU (Hokkaido) [Simeon 1969] [Language Isolate] [N Japan (Hokkaido);
              16,0001
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AKHA (Alu) [Katsura 1973] [Sino-Tibetan: Tibeto-Burman: Burmese-Lolo:
              Lolo: South] [N Thailand; 33,000]
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ALABAMAN [Rand 1968] [Macro-Algonquian: Muskogean] [Texas; 400]
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ALAWA
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ALBANIAN (Tosk) [Newmark 1957] [Indo-European: Albanian] [Albania;
              4 million]
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ALEUT (Eastern) [Geoghegan 1944] [Eskimo-Aleut: Aleut] [Alaska
               (Aleutian Islands); 600]
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ALEUT (Western) [Menovshchikov 1968b] [Eskimo-Aleut: Aleut]
               [E USSR (Commander Islands); 600]
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[b]
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ALTAI
         [Baskakov 1966c] [Altaic: Turkic: Northern] [SC USSR (Altai
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          [Zhukova 1968b] [Paleosiberian: Chukchi-Kamchatkan] [E USSR
               (Kamchatkan Peninsula)]
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            [Osborn 1948] [Ge-Pano-Carib: Macro-Panoan: Pano-Tacana:
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AMBRYN (Southeast) [Parker 1968] [Austro-Tai: Austronesian: Oceanic:
              Eastern: C New Hebrides] [New Hebrides (SE Ambryn
              Island); 1,500]
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AMHARIC (Addis Ababa) [Leslau 1968] [Afro-Asiatic: Semitic: South:
            Ethiopic] [Ethiopia; 8 million]

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AMUESHA
           [Fast 1953] [Andean-Equatorial: Equatorial: Arawakan:-]
              [S Peru; 4,000]
p p<sup>j</sup>
               k
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            ſ
               X
β
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        n
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        ιĴ
        c
          [Longacre 1966] [Oto-Manguean:-] [S Mexico (Guerrero); 8,000]
AMUZGO
                    nc k kw kj nk?
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[Tsertsvadze 1967] [Caucasian: North: Northeast: Avaro-
              Andi-Dido][SW USSR (Daghestan SSR); 8,000]
          kh Kh khw k? k? w k? ah a? a? ahw a? w a? w ?
                                                                     u
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ь Б <u>ф</u> <u>ф</u>
             g
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   tsh Tsh ts?
                 Ts? ¿h ch ¿? z?
                                            phonemic stress
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                                            SVO/AN
m
   n
   I I 4 4
ANDOA (Iquito) [Eastman & Eastman 1963] [Andean-Equatorial: Andean:
              Zaparoan][N Peru; 500]
                                                         high tone
      s
                                                         (C) (C) V
     n
m
                                                         SVO/AN
ANEITYUM (Anejom) [Hewitt 1966] [Austro-Tai: Austronesian: Oceanic:
             Southern New Hebrides] [S New Hebrides (Aneityum); 300]
                                                       (C) V (C)
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ANGAS
        [Burquest 1971] [Afro-Asiatic: Chadic: West: Plateau]
              [SE Nigeria; 130,000]
                                                       high
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       r
           [Huisman 1973] [Indo-Pacific: SW New Guinea: Kukukuku]
ANGATAHA
              [SE Territory of New Guinea (Morobe); 750]
       t
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       n
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ANGOR (Bibriari) [Litteral 1972] [Indo-Pacific: North New Guineal
                    [Territory of New Guinea (West Sepik); 1,250]
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APINAYE
               [Burgess & Ham 1968] [Ge-Pano-Carib: Macro-Ge-Bororo:
                    Macro-Ge: Ge: Northwest] [NC Brazil (Goias); 200]
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(EGYPTIAN) ARABIC (Colloquial) [Mitchell 1962] [Afro-Asiatic: Semitic:South:
                    Southwest] [Egypt; 45 million]
        t t
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           s<sup>D</sup>
                   \frac{\overline{s}}{z}^{\mathfrak{D}}
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m \overline{m}
        n n
                                     penultimate stress
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                 r F
 (IRAQI) ARABIC (Baghdad) [Erwin 1963] [Afro-Asiatic: Semitic: South:
                    Southwest] [Iraq; 10 million]
  \overline{p} [p^{n}][\overline{p}^{n}] \underline{t} \underline{t}^{n} \overline{t}^{n} k \overline{k} q \overline{q} ? \overline{?}
                                                                                 Т
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                                                                                                JJWW
  \overline{b} [b<sup>p</sup>][\overline{b}<sup>p</sup>] d \overline{d}
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                                                                           non-phonemic stress
\mathsf{f} \ \overline{\mathsf{f}} \ [\, \mathsf{f}^{\, \mathfrak{D}} \,] [\, \overline{\mathsf{f}}^{\, \mathfrak{D}} \,] \ \theta \ \overline{\mathsf{g}} \ \underline{\overline{\mathsf{s}}} \ \underline{\overline{\mathsf{s}}}^{\, \mathfrak{D}}
                                               Txx hhhhh
                                                                                    SVO/NA
[v] à ā a a ā a
                       z \overline{z} [z^{\mathfrak{D}}][\overline{z}^{\mathfrak{D}}]
m m [m][m] m m
                      | T [ | T ] [ T ]
                              [Borg 1973] [Afro-Asiatic: Semitic: South: Southwest]
(MALTESE) ARABIC
                     [Malta; 325,000]
                              ? 7
        t ī
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(MOROCCAN) ARABIC [Harrell 1962] [Afro-Asiatic: Semitic: South:
                 Southwest] [Morocco; 17 million]
                 t f t<sup>p</sup> f<sup>p</sup> k k q q ? ?
                                                             t [a]
b b [b<sup>n</sup>][b<sup>n</sup>] d d d<sup>n</sup>
        s s s s s s s
                                 \chi \overline{\chi} h \overline{h} h \overline{h}
                                                                            SVO/NA
        z[z^{n}]
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                       3 3
\overline{a} \ a \ [^{\alpha}\overline{m}][^{\alpha}m] \overline{m} \ m
                   | T [ | T ] [ T |
                  r r r r r
(SYRIAN) ARABIC (Damascus) [Cowell 1964] [Afro-Asiatic: Semitic:
                 South: Southwest] [Syria; 7 million]
                     \underline{t}_{\underline{d}}^{\mathfrak{D}} \ \underline{\overline{t}}_{\underline{p}}^{\mathfrak{D}}
                                k k q q
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                                g g
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                    s<sup>D</sup>
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f 7 [0]
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[6] [v]
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                                                     stress on last long syllable;
om om m m
               n n n
                         \sigma_{\overline{\underline{q}}}
                                                     otherwise, on first syllable
                al al I
                                                               VSO~SVO/NA
(EAST) ARAMAIC
                      [Arsanis 1968] [Afro-Asiatic: Semitic: North:
                 Northwest] [NW Iran; 23,000]
           t
     t
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           d
                       q
                 č
                                                                    penultimate stress
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                                                                    VSO/NA
     S
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m
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ARAPAHO
             [Goddard 1974] [Macro-Algonquian: Algonquian: Central]
                  [Wyoming; 2,000]
                                   i
                                                          ū
         t
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                                   е
    θ
        s
                          h
            (Atsina) [Goddard 1974] [Macro-Algonquian: Algonquian: Central]
ARAPAHO
                 [Wyoming; 2,000]
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ARAWAK
          [Taylor 1969] [Andean-Equatorial: Equatorial: Arawakan:
              Maipuran: Northern: Ta-Arawakan] [Surinam (Bernharddorp)]
[p]
          t
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          r
        [Xajdakov 1967] [Caucasian: North: Northeast: Lezghian]
ARCHI
               [SW USSR (Daghestan); 859]
                                 k^h \overline{k} k^?
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           Z
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           n
              b 4
            [Tumanjan 1966] [Indo-European: Armenian] [SW USSR
ARMENIAN
               (Armenian SSR); 4 million]
  p h
             ţ h
                                 k kh
                                                                 final stress
p
           ţ
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b
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         [Capell 1971] [Austro-Tai: Austronesian: Oceanic: Eastern:
AROSI
               San Cristobal] [Solomon Islands (San Cristobal)]
  p٧
                   k kw
           t
  bw
                   g gw
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           s
m mw
           n
                   ŋ
                                                                   SVO/NA
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[Echeverría & Contreras 1965] [Penutian:-] [Chile

ARAUCANIAN

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Eastern] [N Greece; 200,000]
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                λ
ASMAT (Flamingo Bay) [Voorhoeve 1965] [Indo-Pacific: West New Guinea]
              [SC West Irian; 40,000]
                       i
                                                  (C) V(C)
       t
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                      е
       s
             [ h ]
                                                  SOV/NA
                              э
       n
[b<sup>r</sup>][1]
             \textbf{b}^{\Gamma} is a bilabial trill; \textbf{l} is an alveolar click "expressing
              annoyance."
ATAYAL [Egerod 1966] [Austro-Tai: Austronesian:-] [Formosa; 36,000]
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ATSUGEWI (Atsuke) [Olmsted 1958] [Hokan: Palaihnihan] [N California; 5]
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                                                                phonemic stress
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       [Saint & Pike 1962] [Andean-Equatorial: Andean: Zaparoan]
              [NE Ecuador; 200]
         k
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                                                - RG 1971
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b
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         g
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                                                          phonemic stress
m
    nnn
[q]
[h]
     m is an ingressive pulmonic nasal.
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[Caragiu-Marioteanu 1968] [Indo-European: Italic: Romance:

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New Guinea Highlands: Gauwa] [Territory of New Guinea
               (Eastern Highlands); 5,000]
            th ?t
                        kh ?k
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                                                                            high
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  ²m m̄
              n \overline{n}
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            n
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                                                                             falling
            ٢
       [Madieva 1967] [Caucasian: North: Northeast: Avaro-Andi-Dido]
AVAR
               [SW USSR (Daghestan SSR); 270,000]
                      kh khw kh k? k? a a? a?w
ph th
                      9 g w
   d
                  Ts? [+1] +1? &h &h &? &?
                                                                        (C)(C)V(C)(C)
                                                               а
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                      \times \overline{\times} \times \overline{\times} \overline{\times}^{w}
                                                                        VH
              3
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AWA (Mobuta) [Loving 1966] [Indo-Pacific: Central New Guinea: East
              New Guinea Highlands: Gauwa] [Territory of New Guinea
               (Eastern Highlands); 1,200]
                                                    high
                                                                (C) V(C)
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AWIYA
         [Tucker & Bryan 1966] [Afro-Asiatic: Cushitic: Central]
               [W Ethiopia]
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               k kw
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ILWA
       [Voorhoeve 1971] [Indo-Pacific: North New Guinea: North Papuan]
               [NE West Irian; 400]
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AUYANA (Usarufa) [Bee 1965] [Indo-Pacific: Central New Guinea: East

AXVAX

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Andi-Dido] [SW USSR (Daghestan SSR); 5,000]
p^{h} [p^{?}] t^{h} t^{?} k^{h} k^{?} \overline{k}^{?} q \overline{q} q^{?} \overline{q}^{?} ?
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   [tsh] tsh ts? ts? th [ch] c? [c?][kx]
   t T T T 17 T17
          <u>s</u> <u>s</u>
                                        h
    z
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          n
           4 4
AYMARA (Jagaru) [Hardman 1966] [Andean-Equatorial: Andean: Quechumaran]
              [Peru; 2,000]
           t th t? c ch c?
                               kkhk<sup>?</sup> qqhq<sup>?</sup>
           t s t s h t s ? & & h & ? & & h & ?
           n
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m
        [Briggs 1973] [Andean-Equatorial: Equatorial: Zamucoan]
              [E Bolivia; 1,700]
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AZERBAIJANI (Tabrizi) [Householder 1965] [Altaic: Turkic: Southern]
              [NW Iran; 6 million]
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           [Wheatley 1969] [Ge-Pano-Carib: Macro-Carib: Carib: South]
BACAIRI
              [WC Brazil; 250]
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[Magomedbekova 1967b] [Caucasian: North: Northeast: Avaro-

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BAGVALI (Tlondoda) [Gudava 1967c] [Caucasian: North: Northeast:
              Avaro-Andi-Dido] [SW USSR (Daghestan SSR); 4,000]
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BALANTA (Ganja) [N'Diaye-Corréard 1969] [Niger-Kordofanian: Niger-
              Congo: West Atlantic: Northern][S Senegal; 150,000]
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          (Rakhshani) [Barker & Mengal 1969][Indo-European: Indo-
              Iranian: Iranian: Western] [SW Pakistan; 2 million]
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          (Southwest) [Rastorgueva 1966] [Indo-European: Indo-Iranian:
BALUCHI
              Iranian: Western] [SW USSR (Turkmen SSR); 2 million]
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BARASANO (Northern) [Stolte & Stolte 1971] [Andean-Equatorial: Macro-
              Tucanoan: Catuquina-Tucanoan: Tucanoan: Eastern]
               [SE Colombia; 500]
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[Lloyd & Healey 1970] [Indo-Pacific: Southwest New Guinea:
BARUA
               Kukukuku] [Territory of New Guinea (Eastern Highlands);
               4,0001
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BARYA
         [Tucker & Bryan 1966] [Nilo-Saharan: Chari-Nile: Sudanic:
               Eastern] [N Ethiopia (Eritrea); 25,000]
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b
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BASHKIR
           [Juldashev 1966] [Altaic: Turkic: Western] [E USSR
               (Bashkir ASSR); 1 million]
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BASILA
          [Heine 1968] [Niger-Kordofanian: Niger-Congo: Kva: Central Togo]
               [W Dahomey; 5,000]
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BASQUE (Maya) [N'Diaye 1970] [Language Isolate] [N Spain; 700,000]
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BATAK (Toba) [Tuuk 1971] [Austro-Tai: Austronesian: Indonesian:
              Hesperonesian: West Indonesian] [Indonesia (Sumatra);
              2 million]
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BATS
       [Desheriev 1967b] [Caucasian: North: Northeast: Vejnax]
              [SW USSR (Georgian SSR); 2,500]
                      k k?
                            a [a<sup>?</sup>] ?
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BAULE (Sakasou) [Vogler 1968a] [Niger-Kordofanian: Niger-Congo:
              Kwa: Volta-Comoe][Ivory Coast; 450,000]
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        [Baptista & Wallin 1967] [Andean-Equatorial: Equatorial:
              Arawakan: Maipuran: Southern: Bolivian] [Bolivia (Beni);
              5,000]
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       [Tucker & Bryan 1966] [Afro-Asiatic: Cushitic: Northern]
BEJA
              [NE Sudan; 150,000]
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BEMBE (Muyondzi) [Jacquot 1962] [Niger-Kordofanian: Niger-Congo:
                 Benue-Congo: Bantu: Central Western] [S Congo; 35,000]
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                [Young 1964] [Indo-Pacific: Central New Guinea: East New Guinea Highlands: Gahuku] [Territory of New Guinea
BENA-BENA
                  (Eastern Highlands); 12,000]
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BENGALI (Standard) [Ferguson & Chowdhury 1960][Indo-European: Indo-
Iranian: Indic][Bangladesh; 110 million]
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          [Tucker & Bryan 1966] [Nilo-Saharan: Chari-Nile:-]
                  [W Ethiopia; 28,000]
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[Newman 1971] [Salish:-] [British Columbia; 250]

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[Bokarev & Madieva 1967] [Caucasian: North: Northeast:
 BEZHITA
                Avaro-Andi-Dido] [SW USSR (Daghestan SSR); 2,500]
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 BEZHITA (Gunzib) [Bokarev 1967d] [Caucasian: North: Northeast: Ayaro-
                Andi-Dido] [SW USSR (Daghestan SSR); 2,500]
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 BILIN
          [Tucker & Bryan 1966] [Afro-Asiatic: Cushitic: Central]
                [N Ethiopia (Eritrea); 32,000]
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†BILOXI
           [Haas 1968] [Macro-Siouan: Siouan] [Louisiana]
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 BINI
         [Wescott 1965] [Niger-Kordofanian: Niger-Congo: Kwa: Edo]
                [W Nigeria; 300,000]
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Guinea: East New Guinea Highlands: Tairora] [Territory
              of New Guinea (Eastern Highlands); 117]
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BISU (Ban Lua) [Nishida 1973] [Sino-Tibetan: Tibeto-Burman: Burmese-
              Lolo: Lolo] [N Thailand (Chiang Rai)]
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BLACKFOOT
             [Frantz 1971] [Macro-Algonquian: Algonquian: Central]
              [Montana; 5,000]
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BOAZI (Southern) [Voorhoeve 1970] [Indo-Pacific: Southwest New
              Guinea: Marind] [SW Papua (Western); 1,900]
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         [Crowell 1973] [Ge-Pano-Carib: Macro-Ge-Bororo: Bororo]
              [SW Brazil (Mato Grosso); 400]
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         [Gudava 1967a] [Caucasian: North: Northeast: Avaro-Andi-
BOTLIX
              Dido] [SW USSR (Daghestan SSR); 3,000]
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[Oatridge & Oatridge 1966] [Indo-Pacific: Central New

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BOTLIX (Godoberi) [Gudava 1967b] [Caucasian: North: Northeast: Avaro-
              Andi-Dido] [SW USSR (Daghestan SSR); 3,000]
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BRETON (Vannetais) [Ternes 1970] [Indo-European: Celtic: Brythonic]
              [NW France; 1 million]
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BUANG (Central) [Hooley 1964] [Austro-Tai: Austronesian: Oceanic:
              Northeast New Guinea] [Territory of New Guinea (Morobe);
              7,000]
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BUDUX
        [Desheriev 1967c] [Caucasian: North: Northeast: Lezghian]
              [SW USSR (Azerbaidzhan SSR); 1,000]
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Hesperonesian: West Indonesian: Philippine]
              [Philippines (E Mindoro); 6,000]
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       [Griffin 1970] [Indo-Pacific: Bougainville: Eastern]
BUIN
              [S Bougainville; 9,000]
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             [Aronson 1968] [Indo-European: Slavic: South] [Bulgaria;
BULGARIAN
              8 million]
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m m<sup>j</sup>
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BURERA [Glasgow & Glasgow 1967] [Australian: Bureran] [NC Australia; 350]
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BURMESE (Rangoon) [Cornyn & Roop 1968] [Sino-Tibetan: Tibeton-Burman:
              Burmese-Lolo: Burmese] [Burma; 16 million]
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[Barham 1958] [Austro-Tai: Austronesian: Indonesian:

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BURUSHASKI (Hunza) [Morgenstierne 1945] [Language Isolate]
                [NE Pakistan (Hunza); 20,000]
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           [Bertagaev 1968] [Altaic: Mongolian] [SE USSR (Lake Baikal);
BURYAT
                350,000]
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BYELORUSSIAN [Birillo, Bulaxov & Sudnik 1966] [Indo-European:
               Slavic: East] [W USSR (Byelorussian SSR); 10 million]
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CAHUILLA
              [Bright 1965a] [Aztec-Tanoan: Uto-Aztecan: Takic]
                [S California; 12]
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              [Huffman 1970] [Austro-Asiatic: Mon-Khmer:-] [Cambodia;
CAMBODIAN
               6 million]
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         [Dirks 1953] [Andean-Equatorial: Equatorial: Arawakan:
CAMPA
               Maipuran: Pre-Andine] [EC Peru; 33,000]
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         [Howard 1967] [S Colombia; 2,500]
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CANTONESE
              [Chao 1969] [Sino-Tibetan: Sinitic: South] [S China
               (Canton); 27 million]
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[Townsend 1961] [Penutian: Mayan: Quichean] [EC Guatemala

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Pano: Central] [EC Peru; 400]
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      [Critchfield 1966] [Austro-Asiatic: Nicobarese] [Nicobar Islands]
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       (Western) [Peasgood 1972] [Ge-Pano-Carib: Macro-Carib: Carib:
              Northern] [NC Surinam; 6,000]
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CASHIBO
           [Shell 1950] [Ge-Pano-Carib: Macro-Panoan: Pano-Tacana:
              Pano: Central] [SE Peru]
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CASHINAWA (Curanja River) [Kensinger 1963] [Ge-Pano-Carib: Macro-
              Panoan: Pano-Tacana: Pano: Central] [Peru (Loreto); 2,000]
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CATALAN (Barcelona) [Badia Margarit 1962] [Indo-European: Italic:
              Romance: Western] [E Spain; 5 million]
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[Loos 1969] [Ge-Pano-Carib: Macro-Panoan: Pano-Tacana:

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            [Key 1968] [Ge-Pano-Carib: Macro-Panoan: Pano-Tacana: Tacana]
              [Bolivia; 500]
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          [Lindskoog & Brend 1962] [Macro-Chibchan: Paezan: Barbacoan:
              Cayapa-Colorado] [NW Ecuador; 4,000]
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          [Stout & Thomson 1971] [Ge-Pano-Carib: Macro-Ge-Bororo: Macro-
              Ge: Ge: Northwest] [C Brazil (S Para); 1,500]
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           [Key 1961] [Andean-Equatorial: Equatorial:-] [Bolivia; 100]
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[Matthews & Red Thunder Cloud 1967] [Macro-Siouan:-]

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[Wolff 1966] [Austro-Tai: Austronesian: Indonesian:
               Hesperonesian: North Indonesian: Philippine]
               [Philippines (Cebu); 9 million]
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CHACOBO
           [Prost 1967] [Ge-Pano-Carib: Macro-Panoan: Pano-Tacana: Pano:
               Southeast] [NE Bolivia (Beni); 155]
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CHAM (Vietnamese) [Blood 1967] [Austro-Tai: Austronesian: Indonesian:
               Hesperonesian: West Indonesian] [(South) Vietnam;
               150,0001
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         [Shoemaker & Shoemaker 1967] [Ge-Pano-Carib: Macro-Panoan: Pano-Tacana: Tacana] [NE Bolivia (Beni); 1,000]
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CHAMALAL
             [Magomedbekova 1967c] [Caucasian: North: Northeast: Avaro-
Andi-Dido] [SW USSR (Daghestan SSR); 4,000]
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CEBUANO

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Hesperonesian: North Indonesian: Philippine]
                [Guam; 50,000]
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                                                               (C) (C) V(C)
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b b
            d \overline{d}
                      a a
                                                               penultimate stress
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           t S
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           d z
                                                               VSO/AN
f
            s s
                                 h
m m
            n n
                  n
                      n
            1
              1
CHASTA COSTA (Tolowa) [Bright 1964] [Na-Dene: Athapaskan-Eyak:
               Athapaskan] [N California; 25]
                   t?
               <u>t</u> h
                             k? k?w
                                               i
                                                                          j w
Ь
                ₫
                             g gw
                                               е
                              ¿?
                                                                ã
                          ζħ
                              × W
                s
                             ×
                  ?<sub>D</sub>
  ? m
                             ¥
                n
                  4
CHATINO (Yaitepec) [Pride 1965] [Oto-Manquean: Zapotecan] [S Mexico
                (Oaxaca); 30,000]
                                                                            final stress
                                                              high
p
                k
                                                  ũ
m<sub>b</sub>
               o<sub>g</sub>
                                          ã
                                                  õ
                                                              higher mid
                          е
                                  0
                                                              lower mid VSO/NA
                              а
        $
                h
                                                              low
        n
m
        1
CHAVANTE
             [McLeod 1974] [Ge-Pano-Carib: Macro-Ge-Bororo: Macro-Ge:
                Ge: Central: Acua] [WC Brazil; 2,000]
                      i
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                                                                           final stress
                          а
        ς
                h
        n
            n
m
            [Desheriev 1967a] [Caucasian: North: Northeast: Vejnax]
                [SW USSR (Chechen-Ingush ASSR); 419,000]
               t^{?} k^{h} \overline{k}^{h} k^{?} q^{?} ?
                                         i y
                                                      T 7
                                                              ū [τ][γ]·[υ] j w
                                                Ω
        d d
                   g
                      g
                                                      ē
            ts?
                                         е
                                            Э
                                                0
                               q^{\mathsf{X}}
                      č?
         sh
                  čh
                                                                       [ã]
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        d
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          SENIN
                                                              stress on first syllable
        S
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                                   h
                                         (C) (C) V(C) (C)
                     χ
        z
                                                              of root
                     В
m \overline{m}
                                                              sov
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          F
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[Topping 1973] [Austro-Tai: Austronesian: Indonesian:

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[Bender & Harris 1946] [Macro-Siouan: Iraquoian: Southern]
CHEROKEE
              [W North Carolina; 10,000]
     ₫
     5
                        a
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     z
                        а
     Ц
m
           [Petter 1952] [Macro-Algonquian: Algonquian: Central] [Montana, 3,000]
CHEYENNE
                k W
                                                [ [ ] ] w
       ŧ
h
       Ą
                                     Ë
                                           ō
              g
                        Ė
                               0
       t 9
       9
       n
         [Trefry & Trefry 1967] [Indo-Pacific: Central New Guinea:
             East New Guinea Highlands: Chimbu | [Territory of New
              Guinea (Chimbu); 120,000]
рh
        ŧ h
                kћ
                                       J w
                                                SOV/NA
                                G
                ŋg
        n<sub>d</sub>
                         е
                                O
μP
                             а
                k١
        5
        n
        1
        r
CHIMBU (Golin) [Bunn & Bunn 1970] [Indo-Pacific: Central New Guinea:
              East New Guinea Highlands: Chimbu] [Territory of New
              Guinea (Chimbu); 120,000]
       t
              k k₩
                                             high
                                                      (c) v(d) (c)
ь
       d
              g g₩
                                             1ow
                         E
                                n
                                                      stress on final high tone
       5
                                                      SOV/NA
m
       n
       1
       r
CHINANTEC (Sochiapan) [Foris 1973] [Oto-Manguean: Chinantecan]
              [S Mexico (Oaxaca); 30,000]
                           t
                                                 ũũ
                                                               high level
       ŧ
        5
                                  0[1]
                                                 õ[ 7 ]
                                                               mid level
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[ 4]
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                                                                low level
                     h
       9
                               а
    ð
                                                               mid rising
β
                                             (C) (C) V(C)
                                                                low rising
m
              ŋ
                                                                high falling
       1
                                             VBO/NA
        ţ
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[S Mexico (Oaxaca); 30,000]
                                                           high level
                                            7
                   k
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       t
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                                                           migher mid level
       ₫
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h
                   g
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       t s
                                  а
                                                           lower mid level
[ P]
       s
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       n
                   ŋ
                                       (C) (C) V(C)
                                                           higher mid falling
       Ī
                                                           mid falling
                                                           mid rising
                                                           lower mid rising
           [Olson 1967] [Penutian: Chipayan] [Bolivia; 800]
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                                       [?]
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CHIPEWYAN (Fort Chipewyan) [Fang-Kuei 1946] [Na-Dene: Athapaskan-
              Eyak: Athapaskan] [Canada (Alberta); 5,000]
                            kh khw k? k?w
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                       ts?
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       <u>z</u>
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m
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                                            SOV/NA
                                                                high
          ١
                                                                low
CHIPEWYAN (Slave) [Howard 1963] [Na-Dene: Athapaskan-Eyak: Athapaskan]
               [Canada (N Alberta); 5,000]
                      k kh k?
         t h
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           [ 1]
CHOL (Tumbala) [Warkentin & Brend 1974] [Penutian: Mayan: Cholan]
               [SE Mexico (Chiapas); 32,000]
        [th] t<sup>j</sup> t<sup>?j</sup>
                          kh k?
ph p?
                                                             (C) (C) V(C) (C)
        [b]
                        [g]
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                                             а
[f]
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CHINANTEC (Usila) [Skinner 1962] [Oto-Manguean: Chinantecan]

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CHONTAL (Highland) [Turner 1967] [Hokan: Tequistlatecan] [S Mexico
              (Oaxaca); 9,000]
       t
b
       d
                               e
                                      0
              g
          ts?
f f?
[β][ð]
       n ņ
              ŋ
     [r][r]
CHONTAL (Lowland) [Waterhouse 1962] [Hokan: Tequistlatecan]
              [S Mexico (Oaxaca); 9,000]
                     k k?
                                                        ū
                                   i
                                          н
          ts?
               č č?
                                                 \overline{\epsilon}
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[ß][ß]
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         ? |
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            4
      [ c ][ r ]
CHONTAL (Mayan) [Keller 1959] [Penutian: Mayan: Cholan] [SE Mexico
              (E Tabasco); 15,000]
p p?
                       k k?
                                                   j. w
          d
          t s
[f]
          s
m
          n
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          s r
         [Oakley 1966] [Penutian: Mayan: Cholan] [SE Guatemala; 33,000]
CHORTI
                     k k?
                                                        final stress
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          s
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        [Thomas 1971] [Austro-Asiatic: Mon-Khmer: Bahnaric: South]
              [S South Vietnam (Bien Hoa); 15,000]
                                            T [ Ŧ ] ū
                     k
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                                                                  (C) (C) CV(C)
              С
6[6]
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East New Guinea Highlands: Chimbu] [Territory of
              New Guinea (Chimbu); 19,000]
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       d
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                      A
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      [ Ÿ]
       ſ
CHUJ (San Sebastian) [Williams & Williams 1966] [Penutian: Mayan:
             Cholan] [NW Guatemala; 14,000]
                 k k?
                                                            final stress
у,
Б
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                 š?
       s
                 ×
       n
                 ŋ
       I
       r
           [Skorik 1968a] [Paleosiberian: Chukchi-Kamchatkan] [NE USSR
              (Chukchi Peninsula); 10,000]
       t Ŧ
                k K
      [ts]
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                                                               (C) (C) V(C) (C)
                                       а
                                                               non-phonemic stres
m m
                              is used only by women.
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                                                                    SOV/AN
CHULYM (Lower) [Dul'gon 1966] [Altaio: Turkio: Northern] [C USSR
              (Chulym River); 48,000]
        t tJ
  PJ
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        d dJ
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        s s j
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tCHUMASH (Barbareño) [Beeler 1970] [Hokan:-] [WC California]
p ph p?
            t th t?
                       k kh k?
                                  q qh q?
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            ssh
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CHUAVE (Gomia) [Swick 1966] [Indo-Pacific: Central New Guinea:

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1.5 million]
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[b]
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                         [g]
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[ f ]
            ]<sub>[</sub>[3]
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                                      and | are 'reduced vowels.'
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CIRCASSIAN (East (= kabardian)) [Kuipers 1960] [Caucasian: Northin Northwest] [SW USSR (Caucasus), 275,000] p^h \ p^? \ t^h \ t^? \ k^h J \ k^? J \ k^h w \ k^? w \ q^? \ q^w \ ? \ v \qquad \dagger \qquad J \ w \ SOV/
                                                                                              SOV/AN
             ts?
        g Jw J?w
        Z 3W 3°
                                             R RM
                                                      [ ? ]
         B11?
CIRCASSIAN (West (=Adyge)) [Kumaxov 1967a] [Caucasian: North; Northwest] [SW USSR (Adyge AO), 275,000]
               th t? t? w khw k? w q qw ? ? w
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m
               [Thompson & Thompson 1969] [Salish: Coast: Central]
                   [NW Washington; 10]
                             k kw k?w q q? qw q?w
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m
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[Andreev 1966] [Altaic: Turkic: Bulgar] [W USSR (Chuvash ASSR);

CHUVASH

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fCOAHUILTECO [Troike 1963] [Hokan:-] [NE Mexico (Coahuila)]
                          k k<sup>?</sup> kw k<sup>?</sup>w ?
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COCOPA
           [Wares 1968] [Hokan: Yuman: Delta-Californian] [SW Arizona;
                1,000]
        t
        t <sup>s</sup>
                                                          ā
                       x xw
        s
        n
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COFAN (Aguarico River) [Borman 1962][Andean~Equatorial: Jivaroan] [NE Ecuador: 400]
p ph
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m
            n
COLORADO
              [Moore 1962] [Macro-Chibchan: Paezan: Barbacoan: Cayapa-
                Colorado] [W Ecuador; 600]
        t
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b
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                               е
                                       0
        t s
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                        h
        s
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COLUMBIAN
               [Kinkade 1967] [Salish: Interior: Southern] [Washington; 75]
            t t?
                                                                             jj? ww?
                       k k<sup>?</sup> kw k<sup>?</sup>w
                                       q q<sup>?</sup> qw q<sup>?</sup>w
            t s t s ? + | ?
m m?
            n n?
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            r r?
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COMOX (Mainland) [Davis 1971] [Salish: Coast: Central] [British
               Columbia; 500]
                         k k<sup>?</sup> kw k<sup>?</sup>w q q<sup>?</sup> qw q<sup>?</sup>w ?
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COOS (Hanis) [Pierce 1971] [Penutian:-] [W Oregon; 10]
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                   q q?
                                           [?]
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                 g gw
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CORA
        [McMahon 1967] [Aztec-Tanoan: Uto-Aztecan: Sonoran] [WC Mexico
               (Nayarit); 5,000]
                                                             (C) V(C)
p pw
           t
                   k kw
                č
                                    [æ] a
m mw
           n
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COWLITZ
            [Kinkade 1973] [Salish: Coast: Olympic] [Washington; 2]
         t t?
p p?
                       k k<sup>?</sup> kw k<sup>?</sup>w
                                       qq<sup>?</sup>qwq<sup>?</sup>w?
                                                                          5 jj<sup>?</sup> ww<sup>?</sup>
                        čč<sup>?</sup>
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         n n;
CREE (Swampy) [Ellis 1962] [Macro-Algonquian: Algonquian: Central]
               [E Canada (Ontario); 62,000]
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CROW
        [Gordon 1972] [Macro-Siouan: Siouan] [S Montana; 4,000]
              [?]
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CUBEO

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Tucanoan: Tucanoan: Eastern] [SE Colombia; 1,000]
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m<sub>b</sub>
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           n<sub>f</sub>
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   ð [s]
                           stress on first high-pitched syllable of word
v
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m
      [1]
         [Harkins 1953] [Indo-European: Slavic: West] [Czechoslovakia:
               10 million1
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                                   r is a fricative vibrant.
         [Ray 1967] [Sino-Tibetan: Tibeto-Burman: Gyarung-Mishmi: Non-
               Pronominalized] [N India (Lakhimpur); 40,000]
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          (Eastern) [Wilson & Bendor-Samuel 1969] [Niger-Kordofanian:
               Niger-Congo: Gurl [Ghana: 220,000]
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DAJU (Shatt) [Tucker & Bryan 1966] [Nilo-Saharan: Chari-Nile: Sudanic:
               Eastern] [W Sudan; 100,000]
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[Salser 1971] [Andean-Equatorial: Macro-Tucanoan: Catuquina-

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DAKOTA (Assiniboine) [Levin 1964] [Magro-Siouan: Siouan] [Montana: 15,000]
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DAKOTA
        (Teton)
                   [Stark 1962] [Maoro-Sieuan: Siouan] [South Dakota: 15,000]
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      [Bearth & Zemp 1967] [Niger-Kordofanian: Niger-Congo: Mande:
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              [Fedry 1971] [Afro-Asiatic: Chadic: West: Somrai-Sokoro]
DANGALEAT
               [S Chad, 16,000]
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                 [Stap 1966] [Indo-Pacific: Central New Guinea: West
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               New Gulnea Highlands] [C West Irian]
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          [Bredsdorff 1970] [Indo-European: Germanic: North] [Denmark;
DANISH
               5 million]
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[Abdullaev 1967] [Caucasian: North: Northeast: Lak-Dargwa]
DARGWA
              [SW USSR (Daghestan SSR); 160,000]
   p?
                          k?
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                                                                 (C) V(C)
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                  čh
j
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DEHU
       [Tryon 1968a] [Austro-Tai: Austronesian: Oceanic: Loyalty Islands]
              [Loyalty Islands; 7,000]
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DELAWARE (Lenape) [Voegelin 1946] [Macro-Algonquian: Algonquian:
              Eastern] [Oklahoma; 100]
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DERA (Amgotro) [Voorhoeve 1971] [Indo-Pacific: North New Guinea:
              North Papuan] [E West Irian; 1,300]
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DHEGIHA (Osage) [Wolff 1952] [Macro-Siouan: Siouan] [Missouri; 2,000]
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[SW USSR (Daghestan SSR); 7,000]
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DIEGUEÑO (Mesa Grande) [Langdon 1970] [Hokan: Yuman: Delta-Californian]
              [S California; 185]
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DIEGUEÑO (Tipai) [Wares 1968] [Hokan: Yuman: Delta-Californian]
              [NW Mexico; 185]
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        [Trefry 1970] [Australian: Pama-Nyungan: Dieric] [EC Australia
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              (NE South Australia)]
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DJADJALA (Wembawemba) [Hercus 1969] [Australian: Pama-Nyungan: Kulinic]
               [SE Australia (N Victoria)]
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         [Huttar & Huttar 1972] [Indo-European: Germanic: Atlantic]
DJUKA
               [E Surinam; 16,000]
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[Bokarev 1967a] [Caucasian: North: Northeast: Avaro-Andi-Dido]

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[NW Canada (Great Bear Lake); 1,400]
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DOWAYAYO (Tere) [Weiring 1974] [Niger-Kordofanian: Niger-Congo:
              Adamawa-Eastern: Adamawa] [N Cameroon; 15,000]
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DUNGAN [Kalimov 1968] [Sino-Tibetan] [SC USSR (Kirgiz SSR); 23,000]
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DUTCH
        [Shetter 1958] [Indo-European: Germanic: West] [Netherlands;
              13 million]
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          [Dixon 1972] [Australian: Pama-Nyungan: Pama-Maric: Pama:
DYIRBAL
              Western] [NE Australia (N Queensland); 40]
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DOGRIB (Hare) [Hoijer 1966a] [Na-Dene: Athapaskan=Eyak: Athapaskan]

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EBRIE
         [Vogler 1968b] [Niger-Kordofanian: Niger-Congo: Kwa: Lagoon]
               [Ivory Coast; 11,500]
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              [Lanyon-Orgill 1969] [W Solomon Islands; 800]
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EFIK (Calabar) [Cook 1969] [Niger-Kordofanian: Niger-Congo: Benue-
               Congo: Cross River] [SE Nigeria; 2 million]
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               1973] [Indo-Pacific: Central New Guinea: East New Guinea Highlands: Enga] [SC Territory of New Guinea (Western
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               Highlands); 150,0001
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ENGLISH (American) [Gleason 1961] [Indo-European: Germanic: West]
               [United States: 300 million]
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(NORTHERN) EPERA (Sambu) [Loewen 1963] [Macro-Chibchan: Paezan:
               Choco] [W Colombia; 11,000]
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            [Raun & Saareste 1965] [Uralic: Finno-Ugric: Finnic:
               Southwestern] [NW USSR (Estonian SSR); 1 million]
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ETSAKO (Aywele) [Laver 1969] [Niger-Kordofanian: Niger-Congo: Kwa:
               Edo] [Nigeria; 120,000]
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ENGLISH (British RP) [O'Conner 1973] [Indo-European: Germanic: West]

[England; 300 million]

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[Novikova 1968] [Altaic: Tungus: Northern] [E USSR (E Siberia);
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                7,300]
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           [Konstantinova 1968] [Altaic: Tungus: Northern] [E USSR
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                 (E Siberia); 24,000]
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       [Berry 1951] [Niger-Kordofanian: Niger-Congo: Kwa: Ewe] [Ghana;
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           [Abega 1970] [Niger-Kordofanian: Niger-Congo: Benue-Congo:
EWONDO
                 Bantu: Northwestern] [Cameroon; 93,000]
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EYAK
        [Krauss 1965] [Na-Dene: Athapaskan-Eyak;-] [Alaska (Cordova); 3]
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FANTE (Anumabo) [Welmers 1946] [Niger-Kordofanian; Niger-Congo: Kwa;
               Volta-Comoe] [Ghana, 2 million]
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            [Lehtinen 1963] [Uralic: Finno-Ugric: Finnic] [Finland;
FINNISH
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FORE (Northern) [Scott 1973] [Indo-Pacific: Central New Guinea: East
               New Guinea Highlands: Fore][Territory of New Guinea (Eastern Highlands); 12,000]
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FRENCH (Parisian) [Armstrong 1964a] [Indo-European: Italic: Romance; Western] [France; 75 million]
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Western] [W Canada (British Columbia); 75 million]
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            [Iliescu 1972] [Indo-European: Italie: Romance: Western] [NE Italy: 400,000]
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FULANI (Adamawa) [Stennes 1967] [Niger-Kordofanian: Niger-Congo:
              West Atlantic: Northern [NE Nigeria; 8 million]
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      [Tucker & Bryan 1966] [Nilo-Saharan; -] [W Sudan; 172,000]
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FRENCH (West Canadian) [Ellis 1965] [Indo-European: Italic: Romance:

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[Berry n.d.] [Niger-Kordofanian: Niger-Congo: Kwa: Ga-Adangme]
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                [Ghana; 250,000]
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            [Newman 1971] [Afro-Asiatic: Chadic: East: Tera] [E Nigeria
                (Northeastern); 10,000]
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           [Frantz & Frantz 1966] [Indo-Pacific: Central New Guinea: East
GADSUP
               New Guinea Highlands: Gauwa][Territory of New Guinea (Eastern Highlands); 7,000]
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GADSUP (Agarabi) [Goddard 1967] [Indo-Pacific: Central New Guinea: East New Guinea Highlands: Gauwa] [Territory of New
               Guinea (Eastern Highlands); 7,000]
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GAGAUZ
           [Pokrovskaja 1966] [Altaic: Turkic: Southern] [N Rumania;
                147,000]
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GAHUKU (Asaro) [Strange 1973] [Indo-Pacific: Central New Guinea: East New Guinea Highlands: Gahuku] [Territory of New Guinea (Eastern Highlands); 10,000]

†GALICE [Hoijer 1966b] [Na-Dene: Athapaskan-Eyak: Athapaskan] [SW Oregon]

GALLA [Tucker & Bryan 1966] [Afro-Asiatic: Cushitic: Eastern]

GARO [Burling 1961] [Sino-Tibetan: Tibeto-Burman: Bodo-Naga-Kachin: Bodo] [NE India (Assam); 412,000]

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GASCON (Donzac) [Kelly 1973] [Indo-European: Italic: Romance: West]
                [SW France (Gascony)]
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       (Kuta) [Hyman & Magaji 1971] [Niger-Kordofanian: Niger-Congo:
GBARI
               Kwa: Nupe-Gbari] [Nigeria; 500,000]
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GBEYA (Bossangoa) [Samarin 1966] [Niger-Kordofanian: Niger-Congo:
               Adamawa-Eastern: Eastern] [NW Central African Republic;
               600,000]
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        [Tucker & Bryan 1966] [Afro-Asiatic: Semitic: South: Ethiopic]
                [Ethiopia]
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[Tucker & Bryan 1966] [Afro-Asiatic: Cushitid: Eastern]
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              [SE Ethiopia: 18,000]
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            [Chikobava 1967] [Caucasian: South] [SW USSR (Georgian SSR);
              2.7 million]
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         [Moulton 1962] [Indo-European: Germanic: West] [Germany;
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              100 million]
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              [Bender 1971] [Austro-Tal: Austronesian: Oceanic: Eastern:
GILBERTESE
              Micronesian] [Gilbert Islands; 44,000]
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                [Panfilov 1968] [Paleosiberian] [SE USSR; 3,000]
GILYAK (Amur)
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GOAJIRO (Uribia) [Mansen 1967] [Andean-Equatorial: Equatorial:
                Arawakan: Maipuran: Northern: Ta-Arawakan] [N Colombia;
                40,000]
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GREBO
          [Innes 1966] [Niger-Kordofanian: Niger-Congo: Kwa: Kru]
                [Liberia; 50,000]
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†(CLASSICAL) GREEK
                         [Allen 1968] [Indo-European: Greek] [Greece]
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GREEK (Cypriot)
                     [Newton 1972] [Indo-European: Greek] [Cyprus; 8 million]
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[Bokarev 1967c] [Caucasian: North: Northeastern: Avaro-Andi-

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GREEK (Modern) [Householder, Kazazis & Koutsoudas 1964] [Indo-
European: Greek] [Greece; 8 million]
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GUAHIBO
           [Kondo & Kondo 1967] [Andean-Equatorial: Equatorial:
               Guahibo-Pamigua] [Colombia; 30,000]
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GUANANO
           [Waltz & Waltz 1967] [Andean-Equatorial: Macro-Tucanoan:
               Tucanoan] [Colombia]
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GUARANI (Colloquial) [Gregores & Suarez 1967] [Andean-Equatorial:
               Equatorial: Tupi: Tupi-Guarani] [Bolivia; 2 million]
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             [Aguas 1968] [Australian: Pama-Nyungan: Southwest: Ngarga]
GUDANDJI
               [NC Australia (Northern Territory)]
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GUHU-SAMANE [Richert & Richert 1972] [Indo-Pacific: East New
             Guinea: Binandere] [Territory of New Guinea (Morobe);
             4,0001
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GUJARATI (Ahmedabad) [Cardona 1965] [Indo-European: Indo-Iranian:
             Indio] [W India (Gujarat), 25 million]
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GUSII
        [Whiteley 1960] [Niger-Kordofanian: Niger-Congo: Benue-Congo:
             Bantu: Northeastern] [Kenya (South Nyanza District);
             255,000]
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       [Krauss 1964] [Na-Dene:-] [SW Canada (Queen Charlotte Island);
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HAISLA (Kitamat) [Bach & Bates 1971] [Wakashan: Kwakiutlan]
            [SW British Columbia; 850]
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[Indo-European: Italic: Romance: West] [Haiti: 4.5 million]
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HAKKA (Moi-Yan) [Hashimoto 1973] [Sino-Tibetan: Sinitic] [SE China;
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          [Cooper & Cooper 1966] [Austro-Asiatic: Mon-Khmer: Bahnaric:
              North [N Bouth Vietnam (Kontum); 10,000]
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HALIA (Hagus) [Allen & Allen 1965] [Indo=Pacific: Bougainville]
              [Bougainville: 10,000]
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HAUSA (Kano) [Kraft & Kraft 1973] [Afro-Asiatic: Chadic: West: Hausa-
              Gwandara] [N Nigeria; 6 million]
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HAITIAN CREOLE (Port-au-Prince) [Johnson & Alphonse-Férère 1972]

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HEBREW (Modern) [Chayen 1973] [Afro-Asiatic: Semitic: North: Northwest]
               [Israel; 3 million]
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HIGI (Nkafa) [Mohrlang 1972] [Afro-Asiatic: Chadic: East: Higi]
               [Nigeria; 200,000]
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         [Mehrotra 1964] [Indo-European: Indo-Iranian: Indic] [N India;
               180 million]
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HIOWE (Wourei) [Lewis 1972] [Indo-Pacific: North New Guinea: Sepik]
               [Territory of New Guinea (West Sepik); 1,000]
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[Kahananui & Anthony 1970] [Austro-Tai: Austronesian:

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Oceanic: Eastern: Polynesian] [Hawaii; 250]

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HISHKARYANA
               [Derbyshire 1961] [Ge-Pano-Carib: Macro-Carib: Carib:
              North] [N Brazil; 120]
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HITCHITI (Mikasuki) [West 1962] [Macro-Algonquian: Muskogean]
              [Florida; 750]
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HOPI (Toreva) [Whorf 1946] [Aztec-Tanoan: Uto-Aztecan: Aztecan]
              [NW Arizona; 4,800]
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HOTTENTOT (Korana) [Beach 1938] [Khoisan: Central] [W South Africa;
              50,000]
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HUASTEC (Otoniel Oyarvide) [Larsen & Pike 1949] [Penutian: Mayan:
              Huastecan] [SE Mexico (Veracruz); 40,000]
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        [Stairs & Hollenbach 1969] [Penutian: -] [S Mexico (Caxaca;
              10,000]
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HUICHOL (Central) [Grimes 1964] [Aztec-Tanoan: Uto-Aztecan: Sonoran]
              [WC Mexico; 7,000]
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[Benko & Imre 1972] [Uralio: Finne-Ugric: Ugric]
              [Hungary: 12 million]
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       [Woodward 1964] [Na-Dene: Athapaskan-Eyak: Athapaskan]
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              [NW California, 130]
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IAI (Ouvéa) [Tryon 1968b] [Austro=Tai: Austronesian: Oceanic:
              Loyalty Islands [Loyalty Islands (Ouvea); 1,000]
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              Sepik] [Territory of New Guinea; 8,000]
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          [Mayfield 1972] [Austro-Tai: Austronesian: Indonesian:
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              Hesperonesian: North Indonesian: Philippine] [Philippines
              (Luzon); 200,000]
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[Malone 1970] [Indo-European: Germanic: North] [Iceland;
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IFUGAO (Amganad) [West 1973] [Austro-Tai: Austronesian: Indonesian:
             Hesperonesian: North Indonesian: Philippine]
              [Philippines (Ifugao); 100,000]
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IGBO (Umuahia) [Green & Igwe 1963] [Niger-Kordofanian: Niger-Congo:
             Kwa: Igbo] [SE Nigeria; 6 million]
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IJO (Kalabiri) [Williamson 1969] [Niger-Kordofanian: Niger-Congo:
             Kwa: Ijo][Nigeria; 500,000]
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[Williamson 1969] [Niger-Kordofanian: Niger-Congo:
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INGASSANA
              [Tucker & Bryan 1966] [Nilo-Saharan: Chari-Nile:-]
               [E Sudan; 20,000]
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INGRIAN (Sojki) [Laanest 1966] [Uralic: Finno-Ugric: Finnic]
                [NW USSR; 1,100]
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           [Dolakova 1967] [Caucasian: North: Northeast: Vejnax]
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                [SW USSR (Chechen-Ingush ASSR); 106,000]
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INUPIK (Labrador Inuttut) [Smith 1975] [Eskimo-Aleut: Eskimo]
                [E Canada (Labrador); 60,000]
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         [Whiteley 1958] [Afro-Asiatic: Cushitic: Southern]
                [N Tanzania (Northern Province); 111,000]
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IRISH (Erris) [Fhailigh 1968] [Indo-European: Celtic: Goidelic]
                [Ireland (Erris); 500,000]
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[Menovshchikov 1968a] [Eskimo-Aleut: Eskimo] [NE USSR

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ISLAND CARIB (Hopkins) [Taylor 1955] [Andean-Equatorial: Equatorial:
             Arawakan: Maipuran: Northern: Guayupean] [British
             Honduras; 30,000]
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ISNEG
        [Vanoverbergh 1972] [Austro-Tai: Austronesian: Indonesian:
              Hesperonesian: North Indonesian: Philippine]
              [Philippines (Luzon); 10,000]
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ISOKO (Uzere) [Mafeni 1969] [Niger-Kordofanian: Niger-Congo: Kwa:
              Edo] [Nigeria; 200,000]
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ISTRO-RUMANIAN (Jeian) [Kovačec 1971] [Indo-European: Italic:
              Romance: Eastern] [N Yugoslavia (Istrian Peninsula); 1,000]
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           [Liccardi & Grimes 1961] [Macro-Chibchan:-] [NE Bolivia
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              (Beni); 2,000]
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IVATAN (Itbayat) [Cottle & Cottle 1958] [Austro-Tai: Austronesian:
              Indonesian: Hesperonesian: North Indonesian: Philippine]
              [N Philippines (Batan Islands); 11,000]
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       [Conrad 1972] [Indo-Pacific: North New Guinea: Sepik]
              [W Territory of New Guinea (West Sepik); 1,500]
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IXIL (Nebaj) [Elliot 1960] [Penutian: Mayan: Mamean] [NW Guatemala
               (Quiche); 25,000]
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ITALIAN (Standard) [Agard & DiPietro 1969] [Indo-European: Italic:

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           [Blake 1971] [Australian: Pama-Nyungan:-] [NC Australia
               (W Queensland); 1]
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            [Bloch 1950] [Altaic: Japanese] [Japan; 100 million]
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JAVANESE
            [Horne 1961] [Austro-Tai: Austronesian: Indonesian:
              Hesperonesian: West Indonesian] [Indonesia (Java);
               45 million]
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JIVARO (Aguaruna) [Larsen 1963] [Andean-Equatorial: Jivaroan]
               [NW Peru; 20,000]
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JACALTEC (Jacaltenango) [Day 1973] [Penutian: Mayan: Kanjobalan]

[NW Guatemala: 12,000]

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JUANG (Phulbadi) [Stampe 1966] [Austro-Asiatic: Munda: Greater South:
              Central] [E India (Orissa); 17,000]
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JUANG (Suakati) [Pinnow 1966] [Austro-Asiatic: Munda: Greater South:
              Central] [E India (Orissa); 17,000]
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       [Douglas 1968] [Australian: Pama-Nyungan: Southwest:-]
              [SW Australia (SW Western)]
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KALAGAN [Dawson 1958] [Austro-Tai: Austronesian: Indonesian:
              Hesperonesian: North Indonesian: Philippine]
              [Philippines (Mindanao); 20,000]
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JIVARO (Huambisa) [Beasley & Pike 1957] [Andean-Equatorial: Jivaroan]

[NW Peru; 20,000]

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KALIAI (Kandoka-Lusi) [Counts 1969] [Austro-Tai: Austronesian:
              Oceanic: NE New Guinea] [SW New Britain]
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KALINGA (Guinang) [Gieser 1958] [Austro-Tai: Austronesian: Indonesian:
              Hesperonesian: North Indonesian: Philippine
              [Philippines (N Luzon); 40,000]
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             [Blake 1969] [Australian: Pama-Nyungan:-] [NC Australia
              (W Queensland); 6]
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KAMCHADAL (Napan) [Volodin & Zhukova 1968] [Paleosiberian: Chukchi-
              Kamchatkan] [NE USSR (Koryak District); 350]
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              [Dyen 1971] [Austro-Tai: Austronesian: Indonesian:
              Hesperonesian: North Indonesian: Formosan] [Formosa]
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[Bright 1958] [Dravidian: South] [SW India (Mysore);
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          [Tucker & Bryan 1966] [Nilo-Saharan: Saharan] [Chad; 2 million]
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        [Oates & Oates 1968] [Indo-Pacific: Southwest New Guinea:
              Kukukuku] [Territory of New Guinea (Eastern Highlands);
              15,000]
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KARACHAY
            [Xabichev 1966] [Altaic: Turkic: Western] [SW USSR
               (Kirghiz SSR); 120,000]
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KARAIM (Trakaj) [Musaev 1966] [Altaic: Turkic: Western] [NW USSR
               (Lithuanian SSR); 900]
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       [Biggs 1963] [Indo-Pacific: Central New Guinea: East New
             Guinea Highlands: Karam] [Territory of New Guinea
             (W Madang); 10,000)
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         [Magomedbekova 1967a] [Caucasian: North: Northeast: Avaro-
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             Andi-Dido] [SW USSR (Daghestan SSR); 5,000]
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KARDUTJARA (Mantjiltjara) [Marsh 1969] [Australian: Pama-Nyungan:
             Southwest: Wati] [NW Australia (Western); 250]
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[Bashkakov 1966a] [Altaic: Turkic: Central] [SW USSR

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              Pama-Nyungan: Southwest: Wati] [W Australia
              (SE Western); 4,000]
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        [Bright 1957] [Hokan:-] [NW California; 100]
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           [Oswalt 1964] [Hokan: Pomo: Southwestern] [N California; 50]
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         [Tucker & Bryan 1966] [Niger-Kordofanian: Tutum] [C Sudan
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              (Nuba Hills); 6,000]
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         [Tucker & Bryan 1966] [Niger-Kordofanian: Kordofanian: Katla]
               [C Sudan (Nuba Hills); 8,700]
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          [Blowers 1970] [Indo-Pacific: Central New Guinea: East New
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               Guinea Highlands] [Territory of New Guinea (Western
               Highlands); 8,000]
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KAWAIB (Parintintin) [Pease & Betts 1971] [Andean-Equatorial: Equatorial:
               Tupi: Tupi-Guarani] [Brazil (Amazonas); 500]
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          [Kenesbaev & Karasheva 1966] [Altaic: Turkic: Central]
               [SW USSR (Kazakh SSR); 5.3 million]
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        [Cerulli 1951] [Afro-Asiatic: Omotic: West] [Ethiopia]
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KEIGANA (Yaqaria) [Renck 1967] [Indo-Pacific: Central New Guinea:
             East New Guinea Highlands: Kamano] [Territory of New
             Guinea (Eastern Highlands); 27,000]
                                               (C) V(C)
                                        j w
       d
             g
                                               phonemic stress
               1
                               а
             g
                                               VН
       S
                                               SOV
m
       n
KEKCHI
         [Eachus & Carlson 1966] [Penutian: Mayan: Kanjobalan]
              [N Guatemala; 250,000]
                 k k?
                         q q?
                                       i
                                                  Т
                                                         īī
Р
                                             п
                                                  ē
                                       е
                                                         ō
                                             0
                                                              final stress
              čč?
                                                     ā
               ſχ
       s
       n
m
        [Skorik 1968b] [Paleosiberian: Chukchi-Kamchatkan] [NE USSR
              (Cape Navarin); 100]
                       q q
                                                 ū
                                                             SOV/AN
                                               <del>=</del>
                [ <sub>Y</sub> ]
       n \overline{n}
        Ť
      [r]
KERES (Acoma) [Miller 1965] [Language Isolate] [W New Mexico; 2,000]
          ttht? cchc? kkhk??
                                                                Ŧ u j?jw?w
                                                            Т
          ts tsh ts? ts tsh ts? & &h &?
                                                             ē
                                                                ā
          £ ? £
         п , п
                                                                  (C) CV
         Ţ
KET (Imbat) [Krejnovich 1968b] [Paleosiberian] [C USSR (Yenisei
             River); 850]
      t tj
d dj
                                                              (C) (C) V(C) (C)
                                                    ū
                     q
                                       u
                                             ē
                                                ə
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h
                                е
                                   ə
                                      0
                                                             phonemic stress
      s sj
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                                      Э
                     χ
                                   Б
                                                             SOV/AN
                 Y
      n nj
I ij
r rj
                 η
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KEWA (Muli) [Franklin & Franklin 1962] [Indo-Pacific: Central New
              Guinea: East New Guinea Highlands: Mendi] [Papua
              (Southern Highlands); 47,000]
                                                            initial stress
        t
                       k
                                        u
                                              j w
                                                     high
m<sub>b</sub>
       n d
                                 е
                                        0
                                                     low
                                                            SOV/NA
                                    а
Ф
        s
                       ×
m
        n
               Л
        ĭ
        ſ
          [Karpov 1966] [Altaic: Turkic: Northern] [SC USSR (Khakasskaja
              Oblast); 48,000]
                                         ΤŢ
                                                ū
                                                           (C) V(C) (C)
       t
                                 w v
                                                ₩°
ь
       ₫
                 g
                           ι
                                                           final stress
      [ t s ]
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[3]
                                  0
                                         ē ø
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                                                           VH
[f]
[v]
                                                           SOV/AN
       5
                   Υ
       Z
       n
       Ţ
KHARIA (Dudh) [Biligiri 1965a] [Austro-Asiatic: Munda: Greater
              South: Central] [NE India (Bihar); 160,000]
                 ţ h
₫
         t h
               ţ
                                             ĩ
                                                                  SOV/AN
                                        u
                                                         j w
ь
       ₫
                                             ĩ
                                                    õ
  b
          ď
                     g
                        g
                                 3
                                        0
                                                ã
                 č
                   ξh
                   Ĭ
        S
        n
             [n] n
m
        1
              ٤[٤]
        ſ
       (Cherrapunji) [Rabel 1961] [Austro-Asiatic: Mon-Khmer:-]
               [NE India (Assam); 384,000]
  p h
          t h
                 k kh
        t
                        ?
                                                      ũ
                                                                  final stress
                                                           .i w
        d
                                 ι
                                        ۵
                                                                  SVO/NA
                                               Ξ
                                                      5
                                 3
                                        Э
                                                                   (C) CV (C)
[ 4]
        s
                        h
                                                   ā
        n
              ת ת
         I
        r
KILIWA
          [Wares 1968] [Hokan: Yuman: Delta-Californian] [NW Mexico; 60]
        t th
                 k kh kw khw a ah
p ph
                                              i
                                                          T
                                                     u
                                                          ē
                                              е
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             g
Aخ خ
                                                                      final stress
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        5
                                   h hw
             ŋ
         i
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t th t?

t s

s

t 5?

kkhk??

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z
           n
m
           ١
                 [Bittle 1963] [Na-Dene: Athapaskan-Eyak: Athapaskan]
KIOWA APACHE
               [Oklahoma; 10]
                   k kh k?
     t
                                                                          high
   n<sub>d</sub>
                                                                           low
        tsh ts?
      s
                  č čh č?
     t
                                                                  (C) (C) V(C)
    t <sup>1</sup>
        t h
     s
                              h
     z
           3
                  Y
     n
     ı
KIRGHIZ
           [Junusaliev 1966] [Altaic: Turkic: Northern] [SW USSR
               (Kirghiz SSR); 1.5 million]
                                                u w
                                                        j w
                                                              (C) V(C) (C)
       ţ
               k
                               и ш
b
       ₫
                                                ō
               g
                        e ø
                               0
                                                              final stress
       ţs
           č
                                                              VН
[f]
[v]
             [x]
                                                              SOV/AN
        s
        z[3]
        n
           [Geytenbeek & Geytenbeek 1971] [Australian: Pama-Nyungan:
KITABAL
               Bandjalangic] [E Australia (NE New South Wales); 200]
                                      Т
     ţ
                                              ā
                                                             CV(C)
                                      \overline{\epsilon}
m
     n
          р
               ŋ
                        3
                                                             initial stress (and on
     ĩ
                                          ā
                           а
                                                                 long vowels).
     Ţ
                                                             SOV/NA
KITJA
         [Taylor & Taylor 1971] [Australian: Djeragan] [NW Australia
               (N Western); 300]
          t t<sup>j</sup>
n n<sup>j</sup>
                                                    j w
                                                           CV(C)(C)
     t
                   t ni
     n
                        ŋ
                                                            initial stress
            ij
                                     а
                                              [a]
                                                            SOV/NA
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[Trager 1960] [Aztec-Tanoan: Tanoan] [Oklahoma; 2,000]

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      r
            [Barker 1964] [Penutian:-] [SW Oregon; 60]
KLAMATH
                   k k?
                           q q?
               ۶?
                                                             ō
        d
                    q
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                                   h
m m
        n
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          ņ
! K3
       [Maingard 1958] [Khoisan: Southern] [NW Botswana]
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                               а
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β
        ន្ត
                 ×
                                                            mid level
m
        n
                 ŋ
                                                            low level
        Ę
                                                            falling
                                                            rising
                                                            svo
q
                   3
                   3 h
q h
q?
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                   3
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qg
      ı×
                   3×
q^{\mathsf{X}}
      1×3
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                   ¿×?
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                   ĩ
           [Tucker & Bryan 1966] [Niger-Kordofanian: Kordofanian: Koalib]
                [C Sudan (Nuba Hills); 24,000)]
                                                 j<sup>?</sup>jw
          t
                     k kw
                                                               (C) V(C)
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     ₫
          d
                     g gw g
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m
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               n
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          ſ
KOHO (Sre) [Smalley 1954] [Austro-Asiatic: Mon-Khmer: Bahnaric: South]
                [C South Vietnam (Tuyen Duc); 100,000]
          ?d h
                                               j<sup>?</sup>jw
  ?.<sup>p h</sup>
       t
               c ch
                       k kh ?
                                   ī
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                                                           high falling
                                                                              SVO/NA
b
    b
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               j
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                                                           low rising
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[Bucca & Lesser 1969] [Macro-Siouan: Caddoan] [Oklahoma]

†KITSAI

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KOKO-JELANDJI [Oates & Oates 1964] [Australian: Pama-Nyungan:
             Pama-Maric: Pama: Eastern] [NE Australia (Cape York
             Peninsula); 500]
                                         CV(C)
                            11
                                 .j w
                                         initial stress
       1
                                         SOV/NA
      r
KOLAMI (Wardha) [Emeneau 1955] [Dravidian: Central] [S India
             (Andhra Pradesh); 67,000]
                                                 CV(C)(C)(C)(C)
                    e [ə] o
                                 ē [ā] ō
                                                 initial stress
                                        <del>_</del>
                                                 SOV/AN
     s
     z
m
    n
     1 [1]
      [Tucker & Bryan 1966] [Nilo-Saharan: Koman] [E Sudan; 6,000]
KOMA
           t t?
                   k kw k?
                                    i
                                          u
                                                       high
           d dw d g gw
                                    е
                                          0
                                                       mid
             sw s? [[w
                                                       norm
                                                              SVO/NA
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                             h
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           1
           r
KOMI (Zyrian) [Lytkin 1966] [Uralic: Finno-Ugric: Permic] [NW USSR
             (Komi ASSR); 294,000]
                            i
                              į
                                             (C) V(C) (C)
                                  ш
                                       j
   [ ds ]
                                            initial stress
                                            SOV/AN
             ſ
[f] s
                [x]
             3
    <u>Z</u>
    ŋ
             'n
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KOREAN (Seoul) [Martin 1951] [Altaic:-] [Korea; 34 million]
                       k2 kh k?
          t th t?
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                                        u w
            s?
                 č č<sup>h</sup>
                                    e[ø]o x
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                                                           non-phonemic stress
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                                                           SOV/AN
          n
                       ŋ
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KORKU (Dharni) [Zide 1966] [Austro-Asiatic: Munda: Greater North:
              North] [C India (Madhya Pradesh); 284,000]
          ţ
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b
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KORYAK
          [Zhukova 1968a] [Paleosiberian: Chukchi-Kamchatkan] [E USSR
               (Kamchatkan Peninsula); 6,000]
p \overline{p}
                             qq
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v v
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                   ¥
m \overline{m}
                   ŋ
       [Emeneau 1944] [Dravidian: South] [S India (Nilgiri Hills); 900]
KOTA
Рħ
      ţ h
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                  ţ h
                        k h
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                                                                initial stress
                                        п
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b
      d
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                        g
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m
            n
                  ņ
            i
                  ť
KOYA (Gommu) [Tyler 1969] [Dravidian: Central] [C India; 211,000]
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                                                       (C) V(C) (C) (C)
               k
                                                    .i
                                н
                                       ë
b
     d
          d
               g
                         е
                                0
                                               ō
                                                       non-phonemic stress (on
            č
                                           ā
                                                            long syllables)
                                                       SOV/AN
ν
     5
                 h
          n
     n
          [Welmers 1962] [Niger-Kordofanian: Niger-Congo: Mande:
KPELLE
               Western] [Liberia; 500,000]
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          k
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m
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                                                                   high falling
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[Rickard 1970] [Niger-Kordofanian: Niger-Congo: Kwa: Kru]
              [Liberia; 100,000]
           kp
gb
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                                                                    SVO/NA
m
    n
       ņ
         [Saadiev 1967] [Caucasian: North: Northeast: Lezghian]
KRYTS
               [SW USSR (Azerbaidzhan SSR); 6,000]
                       kh k?
                               qh a?
рh
                                                                       (C) V(C) (C)
        ₫
                                G
                                                    ø
                                                            0
                       g
                                                                 non-phonemic stress
             ts?
                                                  æ
                                                            n
                  čh
        <u>d</u>z
                                                                       SOV/AN
f
        SZ
m
           [Apte & Pattanayak 1967] [Indo-European: Indo-Iranian:
              Indic] [NC India (Uttar Pradesh); 1.2 million]
                                         ū
                                                                  õ
                                  Ē
                                         5
                                              ĩ
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b
    d
          ₫
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                         а
            ĭ
                                                                      SOV/AN
    5
              h
m
     Ŋ
          ņ
              ŋ
         [Magomedov 1966] [Altaic: Turkic: Western] [SW USSR
KUMYK
               (Daghestan ASSR); 135,000]
     ţ
                            i y
                                   uш
                                           j [w]
                                                   (C) V(C) (C)
            C
                            e ø
     d
            j
                                                   stress on final syllable
   [t<sup>s</sup>]
           č
[ដុំ]
                                      α
                                                        of root
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                 ×
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                                                   SOV/AN
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[N Ethiopia (Eritrea); 40,000]
     t t
                k \bar{k}
                                           T
                                                             high
                                                                     phonemic stress
                                           ė
                           е
                                   0
                                                             low
        ď
b
     ₫
                g
                                                ā
                                                                     SOV/NA
                               а
            č
f
     s
       s
  \overline{\mathsf{m}}
     n n
            р
                ŋ
     ı
     r
KUNG
       [Snyman 1970] [Khoisan: Northern] [NE South West Africa; 10,000]
            t th t?
                               k kh k?
                                                                                           [ซ̃] j w
[ซ̃]
[ซ̃*]
                                              i
                                                      u
                                                                   ū
                                                                   ō
                               g
                                              е
                                                       0
                                                                               õ
                    ts?
                                                       o*
                           čžhč? k×?
                                                                   5*
                                                                               ~
5*
                t S h
                                                                                  [8][*8]
                                              æ*
                                                  а
                                                           æ* a
                                                                       ã* ã
            t sx
                     t×?
                 ť×
                           č×
                                          *'pressed' vowels with pharyngeal friction.
            ďΖγ
                           ĭ,
                                                    high level
            5
                                                                          SVO/NA
                               ×
                                                    mid level
β
                           3
                                         Б
            z
                                                    low level
  ?<sub>m m</sub>
                                                    falling
            n
                               ე ე*
                                                    rising
                ť
ļ
        £
                3
                         C
1 h
        ∮ħ
                ţh
                         c h
       f?
                3?
                        63
13
                        c ? h
        ∮?h
1?h
                , ?<sub>h</sub>
1g
                        ¢ g
        £g
                ъg
        ŧgγ
                zgγ
                         cgy
191
        £9 h
                չ9 հ
                         ęЯh
        <sub>∮</sub>gγ?
                        cgy?
Jgy?
                3gy?
1g?h
        £g?h
                         cg?h
                 չց?<sub>հ</sub>
                        c×
1×
        £×
                ъ×
1×3
                2×3
                        (×?
        £×?
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                ĩh
ĩh
                        г'n
                        ĉ<sup>?</sup>h
        ٩٤۽ٍ
                3 ? h
~? h
```

[Tucker & Bryan 1966] [Nilo-Saharan: Chari-Nile:-]

KUNAMA

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KUNIMAIPA (Hajili) [Pence 1966] [Indo-Pacific: East New Guinea:
            Goilala] [E Papua; 8,000]
                                          (C) V(C)
       t
                                  j w
ь
      ₫
              g
                      е
                             0
                                          NA
      ន្ន
      Z
              Y
m
              ŋ
KUNJEN (Oykangand) [Sommer 1969] [Australian: Pama-Nyungan: Pama-Maric:
            Pama: Western] [NE Australia (Cape York Peninsula)]
                   + +h +J +hJ
                                    k kh
                                             L
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                                    ¥
                                                        phonemic stress
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                                     n
                                                        SOV/NA
KURDISH (Sulaimania) [Abdulla & McCarus 1967] [Indo-European: Indo-
            Iranian: Iranian: Western] [NE Iraq; 5 million]
                                         Т
                                               π
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                                                         final stress
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            g
                                               ō
                                                         SOV/NA
         č
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         رٌ س ا
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                 χħh
[v]
                 8 5
      Z
             3
      n
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       r r
KURUX
       [Pfeiffer 1972] [Dravidian: North] [NE India (Bihar);
            1.2 million]
pphtthţthcchkkh?
                                             ū
                                    u
                                         ē ē ō
                                                      õ
          đợ j j
                     g g
                                e ə o
                                                                  SOV/AN
                                  а
         [ņ]
     n
                     η
m
          r [r]
        [Haas 1965] [Language Isolate] [W Canada (Alberta); 400]
p p?
      t t?
            k k?
                   q q?
                          ?
                                 i
                                                   j w
      ts ts?
                                               <u></u>
                                             ā
      s
                          h
     [1] 4
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[Solomon Islands (Malaita); 7,000]
     t
                                                         NA
m<sub>b</sub>
    n d
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                                         ā
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     s
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     n
          ŋ
      l
LAHU (Black) [Matisoff 1973] [Sino-Tibetan: Tibeto-Burman: Burmese-
             Lolo: Lolo] [N Thailand; 300,000]
p ph
          † h
               k kh
                       q qh [?]
                                           i
                                        i
                                                                    sov
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                                                            (C) V
b
                                        e [ə] o
                                                  mid level
           ζh
                                        3
                                                  low level
                                                  higher mid rising
f
                               h
                                                  high falling
               ¥
                                                  lower mid falling
m
        n
                ŋ
                                                  high falling glottalized
                                                  lower mid falling glottalized
LAK (Kumux) [Murkelinskij 1967] [Caucasian: North: Northeast: Lak-
             Dargwa] [SW USSR (Daghestan SSR); 64,000]
         <u>t</u>t? k kw k k? k? w q qw q q??
                                                                      j w
                                                e ø
                                                                    (C) V(C) (C)
              ts? ts? " c & & & &
                                                              a
                                                æ
        s <u>s</u> [
                                                           phonemic stress
                                                                 SOV/AN
m
        n
         [Haudricourt 1967] [Austro-Tai: Kam-Tai: Tai-Kam-Sui: Kam-Sui]
              [S China (Kwangsi); 5,350]
              t th
                     k kh kj khj kw khw ?
p ph pl plh
                                                i
                                                       u
                                                                  ũ
                                                                      .i u w
3 P 3 BI
                                                                  õ
                                                       Э
                                                           ã
                                                               ã
                                     h h<sup>j</sup> hw
                                                high level
                                                low level
                                                lower mid rising
                                                high falling
pl: the articulation of p and | are
                                                lower mid rising-falling
                                                lower mid falling-rising
simultaneous.
```

[Deck 1934] [Austro-Tai: Austronesian: Oceanic: Eastern:-]

KWARA AE

```
[Roffe 1946] [Austro-Tai: Kam-Tai: Tai-Kam-Sui: Tai: South-
T.AO
             western] [Laos; 10 million]
       t th thw k kh kw khw
 рh
                                                  T
                                                      ū ū
                                                                   CV(C)(2)
                                           uw
                                                  ē
                                                      ōŢ
h
       d
                                      е
                                           0
                                                                        SVO/NA
              ččw
                                                  \overline{\epsilon}
                                                      5
                                                            level
                                      ε
                                           Э
                                                            high level
f
       SSW
                              h hw
                                                    ā
                                        а
       n nw
                  ŋ ŋw
                                                            mid level
m
              'n
       1 1 W
                                                            low level
                                                            high falling
                                                            high falling-rising
       [Kert 1966] [Uralic: Finno-Ugric: Lappic] [NW USSR (Kola
LAPP
              Peninsula); 30,000]
          t i tj T Tj k kj K Kj
                                                   Т
                                                          ū
                                                               j w (C) V(C) (C)
                                       î
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m m<sup>j</sup> m m<sup>j</sup>
                                        t, d, and n are 'half-palatalized.'
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LATIN (Classical) [Allen 1965] [Indo-European: Italic] [Italy]
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          [Grabus 1966] [Indo-European: Baltic] [NW USSR (Latvian SSR);
LATVIAN
              2 million]
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[Mejlanova 1967] [Caucasian: North: Northeast: Lezghian]
LEZGHIAN
                 [SW USSR (Daghestan SSR); 110,000]
                              kh k? kw k?w q qh q? qw qhw q?w
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LITHUANIAN
               [Ambrazas, Vajtkjavichjute, Valjatskene, Morkunas,
                 Sabaljauskas & Ul'vidas 1966] [Indo-European: Baltic]
                 [NW USSR (Lithuanian SSR); 3 million]
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m m<sup>j</sup>
             [Vjaaru 1966] [Uralic: Finno-Ugric: Finnic] [NW USSR; 400]
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LOGBARA (Arua)
                  [Crazzolara 1960] [Nilo-Saharan: Chari-Nile: Sudanic:
                  Central] [NW Uganda; 250,000]
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                    n<sub>g</sub> gb
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[N Sierra Leone (Northern); 76,000]
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             [Lanyon-Orgill 1944] [Austro-Tai: Austronesian: Oceanic:
LUANGUIA
                  Eastern: Polynesian] [Leuangiua Atoll; 1,000]
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LUGANDA
           [Ashton, Mulira, Ndawula & Tucker 1954] [Niger-Kordofanian:
                  Niger-Congo: Benue-Congo: Bantu: Northeast]
                  [Uganda; 1.5 million]
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LUISEÑO (Pauma) [Bright 1965b] [Aztec-Tanoan: Uto-Aztecan: Takic]
                   [S California; 150]
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      [Gregersen 1961] [Nilo-Saharan: Chari-Nile: Sudanic: Eastern]
                  [Kenya; 800,000]
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[Innes 1964] [Niger-Kordofanian: Niger-Congo: Mande: Western]

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MACEDONIAN
              [Lunt 1952] [Indo-European: Slavic: South] [S Yugoslavia;
                 1 million]
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MADURESE (Sumenep) [Stevens 1968] [Austro-Tai: Austronesian: Indonesian:
                 Hesperonesian: West Indonesian] [Indonesia (Madura);
                 6 million]
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MAE
      [Capell 1962] [Austro-Tai: Austronesian: Oceanic: Eastern:
                 Polynesian] [New Hebrides; 150]
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[Tucker & Bryan 1966] [Nilo-Saharan: Maban] [E Chad; 9,000]

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MALAGASY (Merina) [Dahl 1952] [Austro-Tai: Austronesian: Indonesian:
                 Hesperonesian: West Indonesian] [Madagascar; 6.5 million]
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m
          n
         [Verguin 1967] [Austro-Tai: Austronesian: Indonesian: Hespero-
MALAY
                 nesian: West Indonesian] [Malaysia; 10 million]
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MALAYALAM (Pulaya) [Subramoniam 1962] [Dravidian: South] [SW India
                  (Kerela); 22 million]
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           [Labouret 1934] [Niger-Kordofanian: Niger-Congo: Mande:
MALINKA
                 Western] [S Mali; 2 million]
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MAIDU (Northeastern) [Shipley 1956] [Penutian: Maidu] [N California: 10]

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MAM (San Ildefonso Ixtahuacan) [Sywulka 1966] [Penutian: Mayan:
                  Mamean] [NW Guatemala; 285,000]
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MAMANWA (Agusan) [Miller 1973] [Austro-Tai: Austronesian: Indonesian:
                  Hesperonesian: North Indonesian: Philippine]
[S Philippines (NE Mindanao); 1,000]
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         [Tucker & Bryan 1966] [Nilo-Saharan: Chari-Nile: Sudanic:
                  Central] [NE Zaire; 60,000]
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                                   p<sup>r</sup> and b<sup>r</sup> are bil
labiodental flap.
                                      and b^{\Gamma} are bilabial trills; v is a
m
          n
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Pr
          r
                  ŗ
MANAMBU (Yambon) [Allen & Hurd 1972] [Indo-Pacific: North New Guinea;
                  Sepik] [Territory of New Guinea (Sepik); 1,500]
р рч
                                               (C) V(C)
              k kw
                                а
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              η<sub>α</sub> η<sub>g</sub>w
                                               phonemic stress
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m mw
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[Chao 1968] [Sino-Tibetan: Sinitic: North] [N China (Peking);
                387 million]
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                                                             high level
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       t s
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           [Tucker & Bryan 1966] [Nilo-Saharan: Chari-Nile: Sudanic:
                Central] [NE Zaire; 300,000]
р pw
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                                                pr, br are bilabial trills; v is
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MANOBO (West Bukidnon) [Elkins 1968] [Austro-Tai: Austronesian:
                Indonesian: Hesperonesian: North Indonesian: Philippine]
                [Philippines (Mindanao); 40,000]
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        [Biggs 1961] [Austro-Tai: Austronesian: Oceanic: Eastern:
MAORI
                Polynesian] [New Zealand; 100,000]
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              [Tryon 1970b] [Australian: Daly] [NC Australia (Northern
                Territory); 50]
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                                       j w
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MARATHI (Poona) [Kelkar 1958] [Indo-European: Indo-Iranian: Indic]
              [W India (Maharashtra); 45 million]
   tidish to dis
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MARGI
        [Hoffman 1963] [Afro-Asiatic: Chadic: East: Bura] [NE Nigeria;
              151,000]
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                           t tw mt nt ntw c nc k kw nk nkw?
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v is a labiodental flap.
MARI (Eastern) [Ristinen 1960] [Uralic: Finno-Ugric: Volgaic]
               [EC USSR (Bashkirskaja ASSR); 540,000]
p [p<sup>j</sup>]
           <u>t [t<sup>j</sup>]</u>
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          [t<sup>s</sup>]
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MARI (Western) [Kovedjaeva 1966] [Uralic: Finno-Ugric: Volgaic]
               [NW USSR; 540,000]
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MARICOPA

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MARSHALLESE
                [Bender 1971] [Austro-Tai: Austronesian: Oceanic:
              Eastern: Micronesian] [Marshall Islands; 19,000]
              ţţ<sup>j</sup>
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        [Tucker & Bryan 1966] [Nilo-Saharan: Chari-Nile: Sudanic:
MASAI
              Eastern] [SW Kenya; 190,000]
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MATACO
          [Tovar 1958] [Ge-Pano-Carib: Macro-Panoan: Mataco]
               [N Argentina (Chaco); 10,000]
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         [Capell & Hinch 1970] [Australian: Iwaidjan] [N Australia
MAUNG
               (Goulburn Island); 200]
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[Wares 1968] [Hokan: Yuman: Delta-Californian]

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[SE Guatemala; 300,000]
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           [Spotts 1953] [Oto-Manquean: Otomian: Central] [SW Mexico
MAZAHUA
               (Michoacan); 80,000]
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           [Pike & Pike 1947] [Oto-Manguean: Popolocan] [S Mexico
MAZATEC
               (Oaxaca); 85,000]
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      [Tucker & Bryan 1966] [Niger-Kordofanian: Niger-Congo: Adamawa-
MBA
               Eastern: Eastern] [N Zaire; 16,000]
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MAYA (Mopan) [Ulrich & Ulrich 1966] [Penutian: Mayan: Mamean]

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Benue-Congo: Jukunoid] [E Nigeria; 10,000]
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MENOMINI
                    [Bloomfield 1962] [Macro-Algonquian: Algonquian: Central]
                         [Wisconsin: 300]
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(LAKE) MIWOK [Broadbent & Callaghan 1960] [Penutian: Miwok-Costanoan:
                        Miwok: Western] [N California; 10]
       \mathsf{p}^\mathsf{h} \ \overline{\mathsf{p}}^\mathsf{h} \ \mathsf{p}^\mathsf{?} \ \overline{\mathsf{p}}^\mathsf{?} \ \mathsf{t} \ \overline{\mathsf{t}} \ \mathsf{t}^\mathsf{h} \ \overline{\mathsf{t}}^\mathsf{h} \ \mathsf{t}^\mathsf{?} \ \overline{\mathsf{t}}^\mathsf{?} \ \mathsf{t} \ \overline{\mathsf{t}}^\mathsf{h} \ \underline{\mathsf{t}}^\mathsf{?} \ \overline{\mathsf{t}}^\mathsf{?} \ \mathsf{t} \ \overline{\mathsf{k}} \ \mathsf{k}^\mathsf{h} \ \overline{\mathsf{k}}^\mathsf{h} \ \mathsf{k}^\mathsf{?} \ \overline{\mathsf{k}}^\mathsf{?} \ \mathsf{?} \ \overline{\mathsf{?}}
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(SOUTHERN SIERRA) MIWOK [Broadbent 1964] [Penutian: Miwok-Costanoan:
                        Miwok: Eastern] [C California; 20]
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MBEMBE (Adun) [Barnwell 1969] [Niger-Kordofanian: Niger-Congo:

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MIXE (Tlahuitoltepec) [Lyon 1967] [Penutian: Mixe-Zoque]
               [S Mexico (Oaxaca); 34,000]
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MIXE (Totontepec) [Crawford 1963] [Penutian: Mixe-Zoque]
               [S Mexico (Oaxaca); 34,000]
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MIXTEC (Ayutla) [Pankratz & Pike 1967] [Oto-Manguean: Mixtecan]
               [SW Mexico (Guerrero); 250,000]
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MIXTEC (Eastern Jamiltepec) [Pensinger & Lyman 1975] [Oto-Manguean:
               Mixtecan] [S Mexico (W Oaxaca); 250,000]
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MIXTEC (Molinos) [Hunter & Pike 1969] [Oto-Manguean: Mixtecan]
               [S Mexico (Oaxaca); 250,000]
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          [Rigsby 1966] [Penutian:-][Oregon]
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MONGOLIAN (Khalkha) [Hangin 1968] [Altaic: Mongolian] [SE Mongolia;
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MORDVIN (Erzja) [Feoktistov 1966a] [Uralic: Finno-Ugric: Volgaic]
              [NW USSR; 1 million]
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MORDVIN (Moksha) [Feoktistov 1966b] [Uralic: Finno-Ugric: Volgaic]
              [NW USSR: 1 million]
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[Wares 1968] [Hokan: Yuman: Pai] [W Arizona; 850]

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Central] [S Sudan; 100,000]
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          [Voorhoeve 1971] [Indo-Pacific?] [E West Irian: 300]
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MOTILON
           [Hanes 1952] [Andean-Equatorial: Equatorial: Arawakan:
              Maipuran: Northern: Caquetion [N Colombia; 7,000]
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          [Kasarhérou 1962] [Austro-Tai: Austronesian: Oceanic: Eastern:
              Northern New Hebrides] [Banks Islands (Motalava); 800]
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          [Judy & Judy 1962] [Andean-Equatorial: Macro-Tucanoan:-]
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               [Bolivia (Beni); 2,000]
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MOXO (Ignaciano) [Ott & Ott 1959] [Andean-Equatorial: Equatorial:
              Arawakan: Maipuran: Southern: Bolivian] [Bolivia (Beni);
               5,000]
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MORU (Amadi) [Cowan 1965] [Nilo-Saharan: Chari-Nile: Sudanic:

MUINANE

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[Walton & Walton 1967] [Ge-Pano-Carib: Macro-Carib:
              Witotoan] [SE Colombia (Amazonas); 150]
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MUNDARI (Mongolpur) [Gumperz 1957] [Austro-Asiatic: Munda: Greater
             North: Eastern] [E India (Orissa); 1.7 million]
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MUONG
        [Barker 1966] [Austro-Asiatic: Mon-Khmer: Viet-Muong]
              [N South Vietnam; 390,000]
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MURA (Piraha) [Sheldon 1974] [Macro-Chibchan:-] [W Brazil (Amazonas);
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        [Tucker & Bryan 1966] [Nilo-Saharan: Chari-Nile: Sudanic:
             Eastern] [SW Ethiopia; 40,000]
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Kuki-Chin: Naga: Southern] [NE India (Assam); 58,000]
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NAHUATL (Orizaba) [Goller, Goller & Waterhouse 1974] [Aztec-Tanoan:
              Uto-Aztecan: Aztecan] [SE Mexico (Veracruz); 1 million]
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NAHUATL (Puebla) [Robinson 1969] [Aztec-Tanoan: Uto-Aztecan:
              Aztecan] [SC Mexico (Puebla); 1 million]
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         [Avrorin 1968] [Altaic: Tungus: Southern] [SE USSR (Xabarovskij
              Kraj); 9,000]
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NANDI
         [Tucker & Bryan 1964] [Nilo-Saharan: Chari-Nile: Sudanic:
              Eastern] [E Kenya (Nandi); 450,000]
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NAGA (Tankhur) [Bhat 1969] [Sino-Tibetan: Tibeto-Burman: Naga-

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OLAVAN
          [Reichard 1951] [Na-Dene: Athapaskan-Eyak: Athapaskan]
                [Arizona; 120,000]
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NEGIDAL (Nizovsk) [Kolesnikova & Konstantinova 1968] [Altaic:
               Tungus: Northern] [SE USSR (Xabarovskij Kraj); 350]
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NENEMA (Koumac) [Haudricourt 1963] [Austro-Tai: Austronesian: Oceanic:
               New Caledonia] [NW New Caledonia; 1,100]
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NASIOI (Darutue) [Hurd & Hurd 1966] [Indo-Pacific: Bougainville:

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Eastern] [Bougainville; 10,000]

[Tryon 1967] [Austro-Tai: Austronesian: Oceanic: Loyalty NENGONE Islands] [Loyalty Islands; 5,000]

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NEPALI (Kathmandu) [Clark 1963] [Indo-European: Indo-Iranian: Indic]
              [Nepal; 10 million]
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           (Upper) [Aoki 1970] [Penutian: Sahaptin-Nez Perce] [Idaho;
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            [Chadwick 1971] [Australian: Pama-Nyungan: Southwest: Ngarga]
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              [NC Australia (Northern Territory); 5]
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NGBANDI
           [Tucker & Bryan 1966] [Niger-Kordofanian: Niger-Congo:
              Adamawa-Eastern: Eastern] [N Zaire; 137,000]
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          [Eastlack 1968] [Niger-Kordofanian: Niger-Congo: Benue-Congo:
NGEMBA
              Bantoid] [W Cameroon; 11,000]
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NIUE
        [McEwen 1970] [Austro-Tai: Austronesian: Oceanic: Eastern:
               Polynesian] [Niue Island; 5,000]
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NOGAI [Baskakov 1966b] [Altaic: Turkic: Central] [SW USER (Stavropol);
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           [Sapir & Swadesh 1955] [Wakashan: Nootkan] [British Columbia
NOOTKA
                (Vancouver Island); 1,800]
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NORWEGIAN (Standard Eastern) [Vanvik 1972] [Indo-European: Germanic:
               North] [Norway; 4.3 million]
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[Dunstan 1963] [Niger-Kordofanian: Niger-Congo: Benue-Congo:

Bantoid] [W Cameroon]

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NUBIAN (Hill) [Tucker & Bryan 1966] [Nilo-Saharan: Chari-Nile:
              Sudanic: Eastern | [N Sudan: 1 million]
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              Eastern] [Sudan; 1 million]
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NUER (Western) [Tucker & Bryan 1966] [Nilo-Saharan: Chari-Nile:
              Sudanic: Eastern] [SE Sudan; 500,000]
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NUKUORO
           [Carroll 1965] [Austro-Tai: Austronesian: Oceanic: Eastern:
              Polynesian] [Nukuoro Island; 400]
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        [Freiberger 1964] [Austro-Tai: Kam-Tai: Tai-Kam-Sui: Tai:
              Central] [North Vietnam; 170,000]
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[Hughes & Leeding 1971] [Australian: Nunggubuyuan] [NC Australia (NE Northern Territory); 400]
NUNGGUBUYU
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                                                 (C) V(C) (C)
m [n] n
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                                                 stress on long vowels;
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                                                 SOV/NA
NUPE (Bida) [Smith 1967] [Niger-Kordofanian: Niger-Congo: Kwa:
               Nupe-Gbari] [Nigeria (Niger); 325,000]
                                                              high
b
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              gb
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     t s
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     ٢
           [Tucker & Bryan 1966] [Nilo-Saharan: Chari-Nile: Sudanic:
NYIMANG
              Eastern [C Sudan (Nuba Hills); 37,000]
                                                                  high
             n <u>d</u>
                                                                  mid
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NYULNYUL (Bardi) [Metcalfe 1971] [Australian: Nyulnyulan]
               [NW Australia (N Western); 200]
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OCAINA
          [Agnew & Pike 1957] [Ge-Pano-Carib: Macro-Carib: Witotoan]
               [NE Peru]
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OIRAT (Kalmyk) [Todaeva 1968] [Altaic: Mongolian] [W Mongolia;
             253,000]
[p]
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          X
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[ f ]
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      z [3]
m
       n
       I
OJIBWA (Eastern) [Bloomfield 1956] [Macro-Algonquian: Algonquian:
             Central] [E Canada (Ontario); 40,000]
                k k
           č <u>č</u>_
       s <del>s</del>
m
       n
           [Watkins 1974] [Salish: Interior: Southern] [British
OKANAGAN
             Columbia]
                 k kw k?
                                q qw q? qw?
      ts ts? t1 t1?
                                                            phonemic stress
                 × ×w
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OLCHA
        [Sunik 1968a] [Altaic: Tungus: Southern] [SE USSR (Xabarovskij
              Kraj); 2,000]
                                                (C) V (C)
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b
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           g
                                               initial stress
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[Φ] s
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                                               SOV/AN
β
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    ¦j
         [Lounsbury 1953] [Macro-Siouan: Iroquoian: Northern]
ONEIDA
              [Wisconsin; 1,000]
                             T
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    [ ] ]
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[Karpushkin 1964] [Indo-European: Indo-Iranian: Indic]
                [NE India (Orissa); 20 million]
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OROCH
         [Avrorin & Lebedeva 1968] [Altaic: Tungus: Southern]
                [SE USSR (Saxalin); 480]
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        [Petrova 1968] [Altaic: Tungus: Southern] [SE USSR (Saxalin];
OROK
                400]
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OROKAIVA (Isivita) [Healey, Isoroembo & Chittleborough 1969]
[Indo-Pacific: East New Guinea: Binandere][E Papua
                (Northern); 25,000]
                                          (C) V(C)
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OSSETIC (Iron) [Abaev 1964] [Indo-European: Indo-Iranian: Iranian:
             Eastern] [SW USSR (Georgian SSR); 350,000]
                     k?
                                                     non-phonemic stress
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OSTYAK (Eastern) [Gulva 1966] [Uralic: Finno-Ugric: Ugric] [NC USSR
              (Khanty-Mansiysk); 15,000]
      t <sup>j</sup>
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          ņ
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                           ě, č, and ž are reduced vowels.
     ı
OSTYAK (Western) [Tereshkin 1966] [Uralic: Finno-Ugric: Ugric]
              [NC USSR (Khanty-Mansiysk); 15,000]
                                                    (C) V(C) (C)
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OTOMI (Mezquital) [Hess 1968] [Oto-Manguean: Otomian: Central]
              [EC Mexico (Hidalgo); 215,000]
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       (Temoayan) [Andrews 1949] [Oto-Manguean: Otomian: Central]
              [SC Mexico (Mexico); 215,000]
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PACOH

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[Watson 1964] [Austro-Asiatic: Mon-Khmer: Katuic] [N South
              Vietnam (Quang Tri); 8,000]
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PAEZ
       [Gerdel 1973] [Macro-Chibchan: Paezan: Inter-Andine]
              [SW Colombia; 20,000]
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          [Wares 1968] [Hokan: Yuman: Pai] [NW Mexico; 140]
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(NORTHERN) PAIUTE (Bannack) [Liljeblad 1950] [Aztec-Tanoan: Uto-
              Aztecan: Numic] [SE Idaho; 2,000]
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(SOUTHERN) PAIUTE [Harms 1966] [Aztec-Tanoan: Uto-Aztecan: Numic]
               [SW Utah: 500]
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           [Bender 1971] [Austro-Tai: Austronesian: Indonesian: Hespero-
PALAUAN
              nesian: North Indonesian: Philippine] [Palau Islands; 12,000]
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[Gibson 1956][Oto-Manquean: Otomian: Northern][EC Mexico (San Luis Potosí); 2,500]
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PAMPANGAN (Bacolor) [Forman 1971] [Austro-Tai: Austronesian: Indonesian:
               Hesperonesian: North Indonesian: Philippine] [Philippines
               (Pampanga); 900,000]
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PARJI (Bastar) [Burrow & Bhattacharya 1953] [Dravidian: Central] [NC India (Madhya Pradesh); 44,000]
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PASHTO
         (Kandahar) [Shafeev 1964] [Indo-European: Indo-Iranian:
               Iranian: Eastern: Pamir] [Afghanistan; 15 million]
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[Burrow & Bhattacharya 1970] [Dravidian: Central]
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                [NE India (Orissa); 1,300]
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PERSIAN (Tajik) [Rastorgueva 1963] [Indo-European: Indo-Iranian:
                Iranian: Western] [SW USSR (Tajik); 25 million]
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           (Tehran) [Obolensky, Panah, & Nouri 1963] [Indo-European: Indo-Iranian: Iranian: Western] [Iran; 25 million]
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      (Papago) [Saxton 1963] [Aztec-Tanoan: Uto-Aztecan: Sonoran]
                [S Arizona; 18,000]
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[Matteson 1965] [Andean-Equatorial: Equatorial: Arawakan: Maipuran: Pre-Andine] [E Peru; 10,000]
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                [Mayers & Mayers 1966] [Penutian: Mayan: Quichean] [NC Guatemala; 37,500]
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POCOMCHI (San Cristobal) [Mayers 1958] [Penutian: Mayan: Quichean]
                   [N Guatemala; 37,500]
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POLISH (Warsaw) [Schenker 1973] [Indo-European: Slavic: West]
                   [Poland; 35 million]
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POMO (Southeastern) [McLendon 1973] [Hokan: Pomo] [N California; 9]
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PONAPEAN
             [Bender 1971] [Austro-Tai: Austronesian: Oceanic: Eastern:
               Micronesian] [Ponape; 15,000]
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PORTUGUESE (Lisbon) [Head 1964] [Indo-European: Italic: Romance:
               West] [Portugal; 100 million]
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PORTUGUESE (Rio de Janeiro) [Head 1964][Indo-European: Italic: Romance: West][Brazil; 100 million]
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PROVENÇAL (Arles) [Coustenoble 1945] [Indo-European: Italic: Romance:
               Western] [S France; 9 million]
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PUGET SOUND SALISH (Southern) [Snyder 1968] [Salish: Coast: Central]
              [NW Washington; 10]
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PUNJABI (Majhi) [Gill & Gleason 1963] [Indo-European: Indo-Iranian:
              Indic] [N India (Punjab); 50 million]
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QUECHUA (Ayacucho) [Parker 1969] [Andean-Equatorial: Andean:
              Quechumaran] [S Peru; 6 million]
                                        penultimate stress
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QUECHUA (Bolivian) [Bills, Vallejo & Troike 1969] [Andean-Equatorial:
              Andean: Quechumaran] [Bolivia; 6 million]
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QUECHUA (Puyo Pongo) [Orr 1962] [Andean-Equatorial: Andean:
              Quechumaran] [E Ecuador; 6 million]
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QUICHE (Cantel) [Fox 1966] [Penutian: Mayan: Quichean] [SW Guatemala;
             300,000]
                     q q?
              k k?
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QUILEUTE [Swadesh 1955] [Language Isolate] [Washington; 20]
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             [Buse 1965] [Austro-Tai: Austronesian: Oceanic: Eastern:
RAROTONGAN
             Polynesian] [S Cook Islands (Rarotonga); 22,000]
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       [Claassen & McElhanon 1970] [Indo-Pacific: Central New Guinea:
RAWA
             Huon-Finisterre: Finisterre: West] [NE Territory of
             New Guinea; 6,000]
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RAWANG (Mutwang) [Morse 1963] [Sino-Tibetan: Tibeto-Burman: Bodo-
             Naga-Kachin: Kachin] [N Burma; 75,000]
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ROMANY [Baltic] [Venttsel' 1966] [Indo-European: Indo-Iranian: Indic]
                 [NW USSR (Estonian SSR); 1 million]
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ROTUMAN
             [Milner 1971] [Austro-Tai: Austronesian: Oceanic: Eastern:-1
                 [Rotuma]
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             (Daco-Rumanian) [Ruhlen 1973] [Indo-European: Italic:
RUMANIAN
                 Romance: Eastern] [Rumania; 20 million]
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         [Broadbent 1957] [Penutian: Miwok-Costanoan: Costanoan]
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             [Jones & Ward 1969] [Indo-European: Slavic: East] [USSR;
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[Dzhejranishvili 1967] [Caucasian: North: Northeast: Lezghian]
RUTUL
                [SW USSR (Daghestan SSR); 7,000]
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RYUKYUAN (Shodon) [Martin 1970] [Altaic: Japanese] [N Ryukyu Islands;
               900,000]
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SA'BAN (Hmeu) [Clayre 1973] [Austro-Tai: Austronesian: Indonesian:
               Hesperonesian: North Indonesian: Philippine] [Borneo;
               1,000]
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SAHAPTIN (Columbia River) [Rigsby 1965] [Penutian: Sahaptin-Nez Perce]
                [NC Oregon; 2,750]
                      k k<sup>?</sup> kw k<sup>?</sup>w a a<sup>?</sup>
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SAISIYAT [Dyen 1971] [Austro-Tai: Austronesian: Indonesian: Hesperonesian: North Indonesian: Formosan] [Formosa; 3,400]

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SAMOAN
         [Marsack 1962] [Austro-Tai: Austronesian: Oceanic: Eastern:
              Polynesian] [Samoa; 130,000]
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SANGLECHI (Ishkashmi) [Paxalina 1966b] [Indo-European: Indo-Iranian:
              Iranian: Eastern: Pamir] [NE Afghanistan; 2,500]
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        [Samarin 1967] [Niger-Kordofanian: Niger-Congo: Adamawa-Eastern:
SANGO
              Eastern] [Central African Republic; 1 million]
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           [Sebeok 1943] [Austro-Asiatic: Munda: Greater North:
SANTALI
              Eastern] [NE India (Assam); 3.7 million]
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SARAMACCAN (Upper Surinam River) [Rountree 1972] [Indo-European:
                Germanic: Atlantic] [C Surinam; 20,000]
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         [Hoijer & Joël 1963] [Na-Dene: Athapaskan-Eyak: Athapaskan]
                [W Canada (Alberta); 50]
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SAYANCI
            [Schneeberg 1971] [Afro-Asiatic: Chadic] [Nigeria (Bauchi);
                50,000]
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SARA (Majingai) [Palayer 1970] [Nilo-Saharan: Chari-Nile: Sudanic:

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SECOYA (Cuyabeno) [Johnson & Peeke 1962] [Andean-Equatorial: Macro-
              Tucanoan: Tucanoan: Western] [NE Ecuador; 160]
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SEDANG (Dak Hmeng) [Smith 1968] [Austro-Asiatic: Mon-Khmer: Bahnaric:
              North] [N South Vietnam (Kontum); 40,000]
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SEEDIQ (Terowan) [Dyen 1971] [Austro-Tai: Austronesian: Indonesian:
              Hesperonesian: North Indonesian: Formosan] [Formosa;
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           [McElhanon 1970] [Indo-Pacific: Central New Guinea: Huon-
SELEPET
              Finisterre: Huon: Western] [NE Territory of New Guinea;
              5,500]
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[Clark 1961] [Penutian: Mixe-Zoque] [SE Mexico (Veracruz);

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[Prokof'eva 1966] [Uralic: Samoyedic] [NC USSR; 3,700]
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            [Chafe 1967] [Macro-Siouan: Iroquoian: Northern] [W New York;
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SENTANI (Eastern) [Cowan 1965] [Indo-Pacific: North New Guinea:
                 North Papuan] [NE West Irian; 6,000]
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SERBO-CROATIAN [Magner 1972] [Indo-European: Slavic: South]
                  [Yugoslavia; 15 million]
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         [Turner 1967] [Hokan:-] [NW Mexico]
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SHILHA (Agadir) [Applegate 1958] [Afro-Asiatic: Berber] [SW Morocco;
                 4 million]
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Benue-Congo: Bantu: Southeastern] [Rhodesia; 118,000]
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        [Babushkin & Donidze 1966] [Altaic: Turkic: Northern]
               [SC USSR (Khakasskaja Oblast); 15,000]
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SHOSHONE (Comanche) [Osborn & Smalley 1949] [Aztec-Tanoan: Uto-
               Aztecan: Numic] [Oklahoma; 5,000]
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          [Sokolova 1966] [Indo-European: Indo-Iranian: Iranian:
SHUGNI
               Eastern: Pamir] [SW USSR (Tadzhik SSR); 40,000]
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SIANE (Komogu) [Lucht & James 1962] [Indo-Pacific: Central New Guinea:
               East New Guinea Highlands: Siane] [Territory of New
               Guinea (Eastern Highlands); 15,000]
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SHONA (Zezuru) [Fortune 1955] [Niger-Kordofanian: Niger-Congo:

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[Pakistan (Karachi); 7 million]
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SINHALESE
              [Coates & de Silva 1960] [Indo-European: Indo-Iranian:
               Indic] [S Sri Lanka; 7 million]
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SIONA (Buena Vista) [Wheeler & Wheeler 1962] [Andean-Equatorial:
               Macro-Tucanoan: Tucanoan: Western] [NE Ecuador; 200]
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SIRIONO
           [Priest 1968] [Andean-Equatorial: Equatorial: Tupi: Tupi-
               Guarani] [E Bolivia (Beni); 5,000]
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           [Hymes 1966] [Penutian: Yakonan] [Oregon; 2]
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[Bordie 1958] [Indo-European: Indo-Iranian: Indic]

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          [Bartos & Gagnaire 1972] [Indo-European: Slavic: West]
SLOVAK
               [Czechoslovakia; 10 million]
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          [Armstrong 1964b] [Afro-Asiatic: Cushitic: Eastern]
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        [Biligiri 1965b] [Austro-Asiatic: Munda: Greater South: South]
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               [EC India (Orissa); 350,000]
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SPANISH (Castilian) [Llorach 1968] [Indo-European: Italic: Romance:
               Western] [Spain; 200 million]
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[Voorhoeve 1971] [Indo-Pacific: North New Guinea: North

Papuan] [NE West Irian; 350]

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SPANISH (Mexican) [Stockwell & Bowen 1965] [Indo-European: Italic:
              Romance: Western] [Mexico; 200 million]
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            [Kuipers 1967] [Salish: Coast: Central] [Washington; 50]
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        [Wilson 1969] [Indo-Pacific: East New Guinea: Binandere]
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              [SE Territory of New Guinea; 1,400]
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SUNDANESE (Southern) [Van Syoc 1959] [Austro-Tai: Austronesian:
              Indonesian: Hesperonesian: West Indonesian] [W Java;
              15 million]
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        [Claassen & McElhanon 1970] [Austronesian?] [NE Territory of
              New Guinea]
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SVAN (Upper Bal) [Topuria 1967] [Caucasian: South] [SW USSR
               (Georgian SSR); 34,000]
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SWAHILI (Standard) [Polomé 1967] [Niger-Kordofanian: Niger-Congo:
              Benue-Congo: Bantu: Central Eastern] [E Africa; 15 million]
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SWEDISH
           [McClean 1969] [Indo-European: Germanic: North]
               [Sweden: 8 million]
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              [Xanmagomedov 1967] [Caucasian: North: Northeast: Lezghian]
               [SW USSR (Daghestan SSR); 35,000]
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                                                                        (C) V(C) (C)
          SIZIN
                                                                        phonemic stress
                                                                        VH
m
                                                                        SVO/AN
          [Van Wynen & Van Wynen 1962] [Ge-Pano-Carib: Macro-Panoan:
              Pano-Tacana: Tacana] [NE Bolivia (Beni); 4,000]
     t
                  ?
                                            penultimate stress
                                                                         SOV/NA
    d
                          ε
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                                d resembles both & and r.
β
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TAGALOG (Manila) [Schachter & Otanes 1972] [Austro-Tai: Austronesian:
             Indonesian: Hesperonesian: North Indonesian: Philippine]
             [Philippines; 10 million]
                                                      (C) CV(C)
                                           ū
                                               j w
    ţ
           k
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b
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                                                      non-phonemic stress
      [č]
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                          ø
[f]
                                                      VSO/AN~NA
m
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    n
TAHITIAN
           [Tryon 1970a] [Austro-Tai: Austronesian: Oceanic: Eastern:
             Polynesian] [Tahiti; 66,000]
                                      ū
           ?
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                                                   (C) V
                                                            VSO/NA
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                                ē
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m
    n
(BLACK) TAI
               [Fippinger & Fippinger 1970] [Austro-Tai: Kam-Tai:
             Tai-Kam-Sui: Tai: Southwestern] [N Laos; 300,000]
    t
      t h
                                ÷
                                                   high level
                                   u
                                           j a w
                                                   higher mid level
b
    d
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                                   0
                                                   lower mid level
                            3
                                   2
                                                   low level glottalized
f
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              x xW
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                                                   high rising
                                                  mid falling glottalized
m
    n
               J JW
                                                   CV(C)
                                                             SVO/NA
          [Vincent & Vincent 1962] [Indo-Pacific: Central New Guinea:
TAIRORA
             East New Guinea Highlands: Tairora] [Territory of New
             Guinea (Eastern Highlands); 11,000]
                k <sup>ŋ</sup>k
                      ?
   p
                                            ē
                                                   ō
                                               ā
                      h
m
        n
        ſ
          [Cheng 1973] [Sino-Tibetan: Sinitic] [SE China]
                  k kh kw khw ? ?w
p ph
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                                                   j a w
                                                             high level
                                                             mid level
                                               Э
                                                             low level
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m m
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L 4
                  o [7]
                                                             high falling
                                                             low falling
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SVO/AN

TAIWANESE (Tainan) [Cheng 1968] [Sino-Tibetan: Sinitic] [Formosa; 15 million]

| TAKELMA [Shipley 1969] [Penutian:-] [Oregon]

TALYSH [Pirejko 1966] [Indo-European: Indo-Iranian: Iranian: Western] [SW USSR (Azerbaidzhan SSR); 150,000]

TAMA [Tucker & Bryan 1966] [Nilo-Saharan: Chari-Nile: Sudanic: Eastern] [E Chad; 45,000]

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$$T$$
 \overline{u} jw high VH SOV/NA b 6 d d g i α $\overline{\iota}$ $\overline{\alpha}$ mid $\overline{\sigma}$ low f s hh ε $\overline{\sigma}$ TAMAZIGHT (Ayt Ayache) [Abdel-Massih 1971] [Afro-Asiatic: Berber] [SE Morocco (Middle Atlas Mountains); 2 million]

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TAMIL (Colloquial) [Pillai 1960] [Dravidian: South] [SE India
               (Madras); 45 million]
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TARASCAN (Tzintzuntzan) [Foster 1969] [Language Isolate] [SW Mexico
              (Michoacan); 50,000]
                     k kh [?]
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[b]
                    [g]
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           t<sup>sh</sup> & čh
        t s
[f]
         s
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               [n]
         n
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       [1]
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TAT
      [Grjunberg 1966] [Indo-European: Indo-Iranian: Iranian: Western]
              [SW USSR (Daghestan SSR); 100,000]
            k
                                    u
                                               (C) V(C) (C)
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                                    Q.
                                               non-phonemic stress (final in
                                               nouns)
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     z [3]
v
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m
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TATAR
        [Zakiev 1966] [Altaic: Turkic: Western] [W USSR (Tatar ASSR);
              6 million]
                                                (C) V(C) (C)
                                                              non-phonemic stress
b
                         [e]
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     d
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    t s
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                                 ъ
f
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             χ
                          ě, \phi, ŏ and \dot{v} are reduced vowels.
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             В
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TATAR (Baraba) [Dmitrieva 1966] [Altaic: Turkic: Western] [WC USSR
              (Novosibirsk); 6 million]
              k
     t
         С
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                                        j w
                                               final stress
                                                                 VH
    d<sub>s</sub>
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TAVGY
         [Tereshchenko 1966b] [Uralic: Samoyedic] [NC USSR (Tajmyr
              Peninsula); 750]
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TECO
       [Kaufman 1969] [Penutian: Mayan: Mamean] [S Mexico (Chiapas);
               5,000]
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m
       [r][r]
TEGALI (Rashad) [Tucker & Bryan 1966] [Niger-Kordofanian: Kordofanian:
               Tegali] [C Sudan (Nuba Hills); 5,000]
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b<sup>m</sup>b
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TELEFOL (Kayalikmiin) [Healey 1964] [Indo-Pacific: Southwest New

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Guinea: Ok] [SW Territory of New Guinea (West Sepik);

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rising

falling

(C) V(C)

SOV/NA

TATAR (Central) [Poppe 1963] [Altaic: Turkic: Western] [W USSR

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(C) V(C) (C)

final stress

(Tatar ASSR); 6 million]

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[Lisker 1963] [Dravidian: Central] [SE India (Andhra Pradesh);
TELUGU
               50 million]
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          [Tucker & Bryan 1966] [Nilo-Saharan: Chari-Nile: Sudanic: Eastern] [C Sudan (Nuba Hills); 2,300]
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TENETEHARA (Guajajara) [Bendor-Samuel 1972] [Andean-Equatorial:
               Equatorial: Tupi: Tupi-Guarani] [NE Brazil (Maranhão);
               4,000]
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TEPETH
          [Tucker & Bryan 1966] [Nilo-Saharan: Chari-Nile: Sudanic:
               Eastern] [NE Uganda]
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[NE Nigeria; 50,000]
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TERENA
           [Ekdahl & Grimes 1964] [Andean-Equatorial: Equatorial:
               Arawakan: Maipuran: Southern: Parana] [SW Brazil
                (Chaco Boreal); 5,000]
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      (Santa Clara) [Hoijer & Dozier 1949] [Aztec-Tanoan: Tanoan]
                [New Mexico; 2,500]
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       (Bangkok) [Cooke 1968] [Austro-Tai: Kam-Tai: Tai-Kam-Sui: Tai:
                Southwest] [Thailand; 30 million]
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TIBETAN (Central) [Miller 1955] [Sino-Tibetan: Tibeto-Burman: Tibetan]
                [SC Tibet; 4 million]
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TERA (Wuyo) [Newman 1970] [Afro-Asiatic: Chadic: East: Tera]

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TIBETAN (Lhasa) [Goldstein & Nornang 1970] [Sino-Tibetan: Tibeto-
              Burman: Tibetan [SC Tibet; 4 million]
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TIGAK (Central) [Beaumont 1969] [Austro-Tai: Austronesian: Oceanic:
              New Ireland] [N New Ireland; 3,000]
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          k
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                                   (C) V(C)
                                              initial stress
b
          q
                  3
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β
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TIGRE (Mensa) [Leslau 1945] [Afro-Asiatic: Semitic: South: Ethiopic]
              [Ethiopia; 117,000]
        t t t? T?
                        k k k R k? k?
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TILLAMOOK
             [Thompson & Thompson 1966] [Salish:-] [Oregon; 10]
                k k?
                      kw k?w
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†TIMUCUA (Mocama) [Granberry 1956] [Language Isolate] [N Florida]
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[Gudava 1967d] [Caucasian: North: Northeast: Avaro-Andi-Dido]
               [SW USSR (Daghestan SSR); 5,000]
                        kk<sup>?</sup> qhq??
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TIV (Gboko) [Arnott 1969] [Niger-Kordofanian: Niger-Congo: Benue-Congo:
              Bantoid] [Nigeria; 1 million]
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TIWA (Picuris) [Trager 1971] [Aztec-Tanoan: Tanoan] [New Mexico; 3,600]
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   TLINGIT
           [Krauss 1964] [Na-Dene:-] [SE Alaska; 1,500]
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   t <sup>s</sup>
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TOJOLABAL
              [Supple & Douglas 1949] [Penutian: Mayan: Tzeltalan]
               [S Mexico (Chiapas); 3,780]
                      k k?
                                                                    (C) (C) CV(C)
       [d]
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            t<sup>s?</sup> čč<sup>?</sup>
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Eastern:-][New Ireland; 45,000]
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TONGOA (Nguna) [Schütz 1969] [Austro-Tai: Austronesian: Oceanic:
             Eastern: Central New Hebrides] [C New Hebrides; 2,250]
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TONKAWA
          [Hoijer 1946] [Macro-Algonquian:-] [C Texas; 5]
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TOTONAC (Villa Juarez) [Reid, Bishop, Button & Longacre 1968]
             [Penutian: Totonacan] [SC Mexico (Puebla); 100,000]
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TOTONAC (Zacatlan) [Aschmann 1946] [Penutian: Totonacan] [SC Mexico
             (Puebla); 63,800]
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    s
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TRIO
      [Jones 1972] [Ge-Pano-Carib: Macro-Carib: Carib: North]
             (Surinam: 780)
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TOLAI (Matupit) [Franklin 1962] [Austro-Tai: Austronesian: Oceanic:

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TSAXUR
         [Talibov 1967] [Caucasian: North: Northeast: Lezghian]
              [SW USSR (Daghestan SSR); 15,000]
                             k kh k?
                                       a ah a??
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                    č čh č<sup>?</sup>
J
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m
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TSIMSHIAN (Gitksan) [Anderson 1974] [Penutian: -] [W Canada (British
              Columbia); 3,000]
                  k k<sup>?</sup> kw k<sup>?</sup>w
               +1?
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       ts ts?
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TSOU
       [Dyen 1971] [Austro-Tai: Austronesian: Indonesian: Hesperonesian:
              North Indonesian: Formosan] [Formosa; 3,200]
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TUAMOTUAN
             [Kuki 1970] [Austro-Tai: Austronesian: Oceanic: Eastern:
              Polynesian] [Tahiti; 10,000]
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TRIOUE (Copala) [Hollenbach 1974] [Oto-Manguean: Mixtecan] [S Mexico (Oaxaca); 8,000]

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TUCANO (Acaricuara) [West & Welch 1967] [Andean-Equatorial:
              Macro-Tucanoan: Tucanoan: Eastern] [Colombia]
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TUCUNA (Cushillococha) [Anderson 1966] [Andean-Equatorial: Macro-
              Tucanoan: Tucanoan: - ] [NW Brazil; 15,000]
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        [Haas 1940] [Macro-Algonquian:-] [Louisiana]
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TURKISH (Osmanli) [Swift 1963] [Altaic: Turkic: Southern] [Turkey;
              24 million]
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(CRIMEAN) TURKISH (Sevortian 1966) [Altaic: Turkic: Southern]
               [SW USSR (Uzbek SSR)]
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            g
                                           final stress
   [t<sup>s</sup>]č k<sup>x</sup>
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Southern] [SW USSR (Turkmen SSR); 2 million]
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TUVA
       [Sat 1966] [Altaic: Turkic: Northern] [SC USSR (Tuvinskaja
              ASSR); 37,000]
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TWANA
        [Drachman 1969] [Salish: Coast: Central] [NW Washington; 10]
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TZELTAL (Southern) [Kaufman 1971] [Penutian: Mayan: Tzeltalan]
              [S Mexico (Chiapas); 100,000]
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TZOTZIL (Huixtec) [Weathers 1947] [Penutian: Mayan: Tzeltalan]
             [S Mexico (Chiapas); 65,000]
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[Azimov, Amansaryev & Saryev 1966] [Altaic: Turkic:

TURKMEN

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[Kumaxov 1967b] [Caucasian: North: Northwest] [SW USSR
UBYX
                (Abxaz SSR); 50]
               ? th tw t? t? w chi chw c? c? w kh khi khw k? k?i
ph ph<sup>10</sup>
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       [Panchwidze & Dzhejranishwili 1967] [Caucasian: North: Northeast:
UDI
                Lezghian] [SW USSR (Azerbaidzhan SSR); 3,700]
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         [Sunik 1968b] [Altaic: Tungus: Southern] [SE USSR (Xabarovskij
                Kraj); 1,400]
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           [Kajdarov 1966] [Altaic: Turkic: Eastern] [NW China (Sinkiang);
UIGHUR
                3.8 million]
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[SW USSR (Ukranian SSR); 40 million]
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ULITHIAN
             [Sohn 1969] [Austro-Tai: Austronesian: Oceanic: Eastern:
               Micronesian] [Caroline Islands (Ulithi Atoll); 590]
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        [Bender 1967] [Indo-European: Indo-Iranian: Indic] [Pakistan;
               40 million]
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URHOBO (Agbon) [Kelly 1969] [Niger-Kordofanian: Niger-Congo: Kwa: Edo]
                [Nigeria; 225,000]
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[Beloded & Zhovtobrjux 1966] [Indo-European: Slavic: East]

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         [Raun 1969] [Altaic: Turkic: Eastern] [SW USSR (Uzbek SSR);
               9 million]
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            [Xjamjaljajnen 1966] [Uralic: Finno-Ugric: Finnic]
VEPSIAN
               [NW USSR; 16,000]
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VIETNAMESE (Hanoi) [Thompson 1965] [Austro-Asiatic: Mon-Khmer:
               Viet-Muong] [Vietnam; 28 million]
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[Claassen & McElhanon 1970] [Indo-Pacific: Central New Guinea:

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New Guinea; 2,000]

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Huon-Finisterre: Finisterre: East] [NE Territory of

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          [Adler 1966] [Uralic: Finno-Ugric: Finnic] [NW USSR; 90]
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VOTYAK
           [Tepljashina 1966] [Uralic: Finno-Ugric: Permic] [NW USSR
                 (Udmart ASSR); 554,000]
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WAFFA (Kusing) [Stringer & Hotz 1971] [Indo-Pacific: Central New
                Guinea: East New Guinea Highlands: Tairora] [Territory
                of New Guinea (Morobe); 940]
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WAGEMAN
             [Tryon 1971] [Australian: Gunwingquan: Yangmanic]
                 [N Australia (Northern Territory); 50]
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[Rombandeeva 1966] [Uralic: Finno-Ugric: Ugric] [NC USSR

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WAICA (Central) [Borgman 1963] [Macro-Chibchan: Chibchan: Waican]
              [S Venezuela; 25,000]
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          [Hawkins & Hawkins 1953] [Ge-Pano-Carib: Macro-Carib: Carib:
WAIWAI
              Northern] [Guyana; 150]
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WAKHI (Eastern) [Paxalina 1966a] [Indo-European: Indo-Iranian:
              Iranian: Eastern: Pamir] [NE Afghanistan; 5,000]
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WALAMO (Gofa) [Tucker & Bryan 1966] [Afro-Asiatic: Omotic: West]
              [S Ethiopia; 900,000]
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WALAPAI (Big Sandy) [Redden 1966] [Hokan: Yuman: Pai] [NW Arizona; 850]
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WAPISHANA
              [Tracy 1972] [Andean-Equatorial: Equatorial: Arawakan:
              Maipuran: Wapishanan] [S Guyana; 9,000]
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WAPPO
         [Sawyer 1965] [Language Isolate] [C California; 1]
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WARAO (Cano Bagre) [Osborn 1966] [Macro-Chibchan:-] [E Venezuela
               (Monagas); 10,000]
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WASHKUK (Melowai) [Kooyers, Kooyers & Bee 1971] [Indo-Pacific: North
              New Guinea: Sepik] [Territory of New Guinea (Sepik); 2,500]
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[Davis 1964] [Indo-Pacific: Central New Guinea: Huon-Finisterre: Finisterre: East] [NE Territory of New

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           [Loewen 1960] [Macro-Chibchan: Paezan: Choco] [W Colombia;
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WAYANA
          [Jackson 1972] [Ge-Pano-Carib: Macro-Carib: Carib: North]
               [S Surinam; 500]
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WELSH
         [Bowen & Jones 1970] [Indo-European: Celtic: Brythonic]
               [England (Wales); 750,000]
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WERI (Sim) [Boxwell & Boxwell 1966] [Indo-Pacific: East New Guinea:
               Goilala] [Territory of New Guinea (Morobe); 3,000]
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           [Garvin 1950] [Macro-Siouan: Caddoan] [Kansas; 200]
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[Jacobsen 1958] [Hokan:-] [NE California (Lake Tahoe); 100]

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[Sayers 1964] [Australian: Pama-Nyungan: Pama-Maric:
               Pama: Middle] [NE Australia (Cape York Peninsula); 500]
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               Witotoan] [NE Peru; 4,000]
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WITOTO (Murui) [Burtch & Wise 1968] [Ge-Pano-Carib: Macro-Carib:
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         [Teeter 1964] [Macro-Algonquian:-] [NW California]
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         [Anceaux 1952] [Austro-Tai: Austronesian: Indonesian: East]
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                [S Celebes; 25,000]
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WU (Changchow) [Chao 1970] [Sino-Tibetan: Sinitic] [EC China
                (Chekiang); 46 million]
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XINALUG
            [Desheriev 1967d] [Caucasian: North: Northeast: Lezghian]
                [SW USSR (Azerbaidzhan SSR); 900]
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XINCA
         [Campbell 1972] [Macro-Chibchan:-] [SE Guatemala; 100]
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XVARSHI (Inxokari) [Bokarev 1967b] [Caucasian: North: Northeast: Avaro-
               Andi-Dido] [SW USSR (Daghestan SSR); 1,000]
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WOLOF (Dyolof) [Sauvageot 1965] [Niger-Kordofanian: Niger-Congo: West Atlantic: Northern] [Senegal; 1.2 million]

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YAGHNOBI (Western) [Bogoljubov 1966] [Indo-European: Indo-Iranian:
               Iranian: Eastern [SW USSR (Tadzhik SSR); 2,000]
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         [Powlison 1971] [Ge-Pano-Carib: Macro-Carib: Peba-Yaguan]
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               [NE Peru]
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        [Van Den Eynde 1968] [Niger-Kordofanian: Niger-Congo: Benue-
YAKA
               Congo: Bantu: Northwest] [Zaire]
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       n<sub>d</sub>z
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         [Ubrjatova 1966] [Altaic: Turkic: Northern] [SC USSR (Jakutskaja
YAKUT
               ASSR); 285,000]
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            [Kirton 1967] [Australian: Yanyulan] [NC Australia; 150]
YANYULA
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YAPESE
          [Bender 1971] [Austro-Tai: Austronesian: Oceanic: Eastern:
              Micronesian] [Yap; 4,000]
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        [Lindenfeld 1973] [Aztec-Tanoan: Uto-Aztecan: Sonoran]
              [NW Mexico (Sonora); 15,000]
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YAREBA (Bibira) [Weimer & Weimer 1972] [Indo-Pacific: East New
              Guinea: Mailu] [E Papua; 750]
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          [Mosonyi 1966] [Andean-Equatorial: Jivaroan] [S Venezuela;
              5,000]
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YAO (Hwei Kang Pa) [Purnell 1965] [Sino-Tibetan: Miao-Yao: Yao] [N Thailand (Chiengrai); 1 million]

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YAY (Muong Hum) [Gedney 1965] [Austro-Tai: Kam-Tai: Tai-Kam-Sui:
              Tai: Northern] [N North Vietnam]
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YAZGHULAMI
               [Edel'man 1966] [Indo-European: Indo-Iranian: Iranian:
               Eastern: Pamir] [SW USSR (Tadzhik SSR); 2,000]
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YENETS
          [Tereshchenko 1966c] [Uralic: Samoyedic] [NC USSR; 300]
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YIDDISH
           [Fal'kovich 1966] [Indo-European: Germanic: West] [E USSR;
               4 million]
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         [Healey 1958] [Austro-Tai: Austronesian: Indonesian: Hespero-
YOGAD
               nesian: North Indonesian: Philippine] [Philippines
               (N Luzon); 8,000]
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YORUBA

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        (Itsekiri) [Opubor 1969] [Niger-Kordofanian: Niger-Congo:
YORUBA
              Kwa: Yoruba] [Nigeria; 12 million]
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YUCHI
        [Crawford 1973] [Macro-Siouan:-] [Georgia; 35]
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         [Schauer & Schauer 1967] [Andean-Equatorial: Equatorial:
YUCUNA
              Arawakan: Maipuran: Northern: Rio Negro] [S Colombia
               (Amazonas); 450]
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YUKAGHIR (Tundra)
                      [Krejnovich 1968a] [Paleosiberian] [NE USSR; 400]
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[Ward 1952] [Niger-Kordofanian: Niger-Congo: Kwa: Yoruba]

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[Stark 1972] [Penutian: Chipayan] [NW Perul
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YUPIK (Kuskokwim) [Mattina 1970] [Eskimo-Aleut: Eskimo] [SW Alaska;
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         [Claassen & McElhanon 1970] [Indo-Pacific: Central New Guinea:
YUPNA
                Huon-Finisterre: Finisterre: East] [NE Territory of New
                Guinea; 4,000]
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YURAK
         [Tereshchenko 1966a] [Uralic: Samoyedic] [NC USSR; 25,000]
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YURAK (Tundra) [Decsy 1966] [Uralic: Samoyedic] [NC USSR (Naryan Mar);
                25,000]
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ZAN (Mingrelian) [Kiziria 1967] [Caucasian: South] [SW USSR
              (Georgian SSR); 349,000]
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        [Tucker & Bryan 1966] [Niger-Kordofanian: Niger-Congo:
              Adamawa-Eastern: Eastern] [N Zaire; 700,000]
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ZAPARO
         [Peeke 1962] [Andean-Equatorial: Andean: Zaparoan] [E Ecuador;
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ZAPARO (Arabela) [Rich 1963] [Andean-Equatorial: Andean: Zaparoan]
              [N Peru; 50]
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ZAPOTEC (Rincon) [Earl 1968] [Oto-Manquean: Zapotecan] [S Mexico
              (Oaxaca); 14,000]
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ZOQUE (Copainala) [Wonderly 1951] [Penutian: Mixe-Zoque] [S Mexico;
              20,000]
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       [Doke 1961] [Niger-Kordofanian: Niger-Congo: Benue-Congo:
             Bantu: Southeastern] [South Africa; 2 million]
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       [Newman 1965] [Penutian:-] [New Mexico; 3,500]
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SUMMARY OF GENETIC CLASSIFICATION

AFRO-ASIATIC

BERBER: Shilha, Tamazight

CHADIC: Sayanci

EAST: Margi, Higi, Tera, Ga'anda

WEST: Hausa, Angas, Dangaleat

CUSHITIC: NORTHERN: Beja

CENTRAL: Awiya, Bilin

EASTERN: Somali, Galla, Galeba

SOUTHERN: Iragw

OMOTIC: Walamo, Kefa

SEMITIC: NORTH: Hebrew, East Aramaic

SOUTH: SOUTHWEST: Arabic (Syrian), Arabic (Iraqi),

Arabic (Egyptian), Arabic (Moroccan),

Arabic (Maltese)

ETHIOPIC: Amharic, Tigre, † Geez

NIGER-KORDOFANIAN

KORDOFANIAN: Koalib, Katla, Tegali, Katcha

NIGER-CONGO: WEST ATLANTIC: Fulani, Wolof, Balanta

MANDE: EASTERN: Dan

WESTERN: Malinka, Kpelle, Loko

GUR: Dagbani

KWA: EDO: Bini, Urhobo, Isoko, Etsako

EWE: Ewe

GA-ADANGME: Ga

IGBO: Igbo

IJO: Ijo (Kalabiri), Ijo (Kolokuma), Ijo (Nembe)

KRU: Kru, Grebo

LAGOON: Ebrie

NUPE-GBARI: Nupe, Gbari

CENTRAL TOGO: Basila

VOLTA-COMOE: Fante, Baule YORUBA: Yoruba, Yoruba (Itsekiri)

ADAMAWA-EASTERN: ADAMAWA: Dowayayo

EASTERN: Gbeya, Ngbandi, Sango, Zande, Mba

BENUE-CONGO: CROSS RIVER: Efik

JUKUNOID: Mbembe BANTOID: Tiv, Ngwe, Ngemba

BANTU: CENTRAL EASTERN: Swahili

CENTRAL WESTERN: Bembe

NORTHEASTERN: Luganda, Gusii

NORTHWESTERN: Yaka, Ewondo SOUTHEASTERN: Zulu, Shona

NILO-SAHARAN

KOMAN: Koma MABAN: Maba SAHARAN: Kanuri

CHARI-NILE: Kunama, Berta, Ingassana

SUDANIC: CENTRAL: Mangbetu, Mamvu, Logbara, Moru, Sara EASTERN: Murle, Daju, Barya, Nubian (Hill), Nubian (Nobiin), Nyimang, Tama, Temein, Tepeth, Luo, Nuer, Masai, Nandi

KHOISAN

NORTHERN: Kung

CENTRAL: Hottentot (Korana), Hottentot (Nama)

SOUTHERN: !K5

INDO-EUROPEAN

Albanian, Armenian

BALTIC: Lithuanian, Latvian

SLAVIC: EAST: Russian, Byelorussian, Ukranian

WEST: Czech, Slovak, Polish

SOUTH: Bulgarian, Macedonian, Serbo-Croatian GERMANIC: NORTH: Icelandic, Danish, Norwegian, Swedish

WEST: German, Yiddish, Dutch, Afrikaans, English (RP), English (American)

ATLANTIC: Saramaccan, Djuka

ITALIC: Latin

ROMANCE: EAST: Rumanian (Daco-Rumanian), Istro-Rumanian,

Arumanian

WEST: Italian, Friulan, Provençal, French (Parisian), French (West Canadian), Haitian Creole, Gascon, Catalan, Spanish (Castilian), Spanish (Mexican), Portuguese (Lisbon), Portuguese (Rio de Janeiro)

CELTIC: GOIDELIC: Irish

BRYTHONIC: Welsh, Breton

INDO-IRANIAN: IRANIAN: WESTERN: Persian (Tehran), Persian (Tajik),

Kurdish, Tat, Talysh, Baluchi (Rakhshani), Baluchi (Southwest) EASTERN: Ossetic, Yaghnobi, Pashto, Shugni, Wakhi, Sanglechi, Yazghulami

INDIC: Gujarati, Punjabi, Hindi, Urdu, Bengali, Oriya, Marathi, Kumauni, Nepali, Sindhi, Sinhalese, Romany

GREEK: Classical Greek, Greek (Modern), Greek (Cypriot)

CAUCASIAN

NORTH: NORTHEAST: AVARO-ANDI-DIDO: Andi, Avar, Axvax, Bagvali, Bezhita, Bezhita (Gunzib), Botlix, Botlix (Godoberi), Chamalal, Dido, Ginux,

Karata, Tindi, Xvarshi

LAK-DARGWA: Dargwa, Lak

LEZGHIAN: Agul, Archi, Budux, Kryts, Lezghian, Rutul,

Tabasaran, Tsaxur, Udi, Xinalug VEJNAX: Bats, Chechen, Ingush

NORTHWEST: Abkhazian (Abzhui), Abkhazian (Abaza), Circassian (East), Circassian (West), Ubyx

SOUTH: Georgian, Svan, Zan

URALIC

FINNO-UGRIC: FINNIC: Finnish, Ingrian, Karelian, Livonian, Estonian, Vepsian, Votic

LAPPIC: Lapp

VOLGAIC: Mari (Eastern), Mari (Western), Mordvin (Erzia)

Mordvin (Moksha) PERMIC: Komi, Votyak

UGRIC: Hungarian, Ostyak (Eastern), Ostyak (Western), Vogul

SAMOYED: Selkup, Tavgy, Yenets, Yurak, Yurak (Tundra)

ALTAIC

Korean

TURKIC: BULGAR: Chuvash

COMMON TURKISH: CENTRAL: Karakalpak, Nogai, Kazakh

EASTERN: Uighur, Uzbek NORTHERN: Altai, Chulym, Khakas, Kirghiz, Shor,

Yakut, Tuva

SOUTHERN: Azerbaijani, Crimean Turkish, Gagauz,

Turkish, Turkmen WESTERN: Bashkir, Karachay, Karaim, Kumyk,

Tatar, Tatar (Central), Tatar (Baraba)

MONGOLIAN: Buryat, Mongolian, Oirat

TUNGUS: NORTHERN: Even, Evenki, Negidal

SOUTHERN: Nanaj, Olcha, Oroch, Orok, Udihe

JAPANESE: Japanese, Ryukyuan

PALEOS I BERIAN

Ket, Gilyak, Yukaghir

CHUKCHI-KAMCHATKAN: Chukchi, Kerek, Koryak, Alutor, Kamchadal

DRAVIDIAN

NORTH: Kurux

CENTRAL: Telugu, Koya, Kolami, Parji, Pengo SOUTH: Tamil, Malayalam, Kannada, Kota

SINO-TIBETAN

Dungan

SINITIC: Mandarin, Wu, Cantonese, Hakka, Taishan, Taiwanese

MTAO-YAO: Yao

TIBETO-BURMAN: BODO-NAGA-KACHIN: BODO: Garo

KACHIN: Rawang

BURMESE-LOLO: BURMESE: Burmese LOLO: Lahu, Bisu, Akha

GYARUNG-MISHMI: Dafla

NAGA-KUKI-CHIN: Naga TIBETAN: Tibetan (Lhasa), Tibetan (Central)

AUSTRO-ASIATIC

MUNDA: GREATER NORTH: NORTH: Korku

EASTERN: Mundari, Santali

GREATER SOUTH: CENTRAL: Kharia, Juang (Phulbadi), Juang (Suakati)

SOUTH: Sora

MON-KHMER: Cambodian, Khasi

VIET-MUONG: Vietnamese, Muong

KATUIC: Pacoh

BAHNARIC: NORTH: Sedang, Halang

SOUTH: Koho, Chrau

NICOBARESE: Car

INDO-PACIFIC

WEST NEW GUINEA: Asmat

NORTH NEW GUINEA: Angor

NORTH PAPUAN: Awji, Dera, Sentani, Sko

SEPIK: Hiowe, Iatmul, Iwam, Manambu, Washkuk

SOUTHWEST NEW GUINEA: OK: Telefol

MARIND: Boazi

KUKUKUKU: Angataha, Barua, Kapau

CENTRAL NEW GUINEA: WEST NEW GUINEA HIGHLANDS: Dani

EAST NEW GUINEA HIGHLANDS: Kaugel, Enga, Kewa,

Auyana, Awa, Gadsup, Gadsup (Agarabi), Waffa, Binumarien, Tairora, Fore, Bena-Bena, Gahuku, Keigana, Chuave,

Chimbu, Chimbu (Golin), Karam, Siane HUON-FINISTERRE: Yupna, Wantoat, Uri, Rawa, Selepet EAST NEW GUINEA: Kunimaipa, Weri, Orokaiva, Suena, Guhu-Samane, Yareba

BOUGAINVILLE: Halia, Buin, Nasioi

AUSTRALIAN

IWAIDJAN: Maung GUNWINGGUAN: Wageman BURERAN: Burera NUNGGUBUYUAN: Nunggubuyu

MARAN: Alawa YANYULAN: Yanyula DALY: Maranungku DJERAGAN: Kitja NYULNYULAN: Nyulnyul

PAMA-NYUNGAN: Kalkutung, Jalanga

BANDJALANGIC: Kitabal DIERIC: Dieri

KULINIC: Djadjala

PAMA-MARIC: Koko-Jelandji, Wik-Munkan, Kunjen, Dvirbal

SOUTHWEST: Juat

WATI: Kardutjara (Gugada), Kardutjara (Pitjantjatjara), Kardutjara

(Mantjiltjara) NGARGA: Gudandji, Ngarndji

AUSTRO-TAI

KAM-TAI: TAI-KAM-SUI: TAI: SOUTHWEST: Thai, Lao, Black Tai

CENTRAL: Nung NORTHERN: Yay

KAM-SUI: Lakkia

AUSTRONESIAN: Atayal

INDONESIAN: EAST: Wolio

WEST: Indonesian, Malay, Madurese, Javanese,

Sundanese, Malagasy, Batak, Cham

NORTH: PHILIPPINE: Tagalog, Ibanag, Isneg, Kalinga, Yogad, Kalagan, Mamanwa, Manobo, Ivatan, Cebuano, Buhid, Ifugao,

Pampangan, Sa'ban, Chamorro, Palaun

FORMOSAN: Kanakanabu, Saisiyat, Seedig,

Tsou

OCEANIC: NORTHEAST NEW GUINEA: Buang, Adzera

NEW BRITAIN: Kaliai NEW IRELAND: Tigak NEW CALEDONIA: Nenema

LOYALTY ISLANDS: Nengone, Iai, Dehu SOUTHERN NEW HEBRIDES: Aneityum EASTERN: Kwara'ae, Rotuman, Tolai

MICRONESIAN: Gilbertese, Marshallese, Ulithian, Yapese, Ponapean

SAN CRISTOBAL: Arosi

NORTHERN NEW HEBRIDES: Motlav

CENTRAL NEW HEBRIDES: Ambryn, Tongoa POLYNESIAN: Samoan, Tuamotuan, Tahitian, Nukuoro, Niue, Mae, Luanguia, Rarotongan,

Maori, Hawaiian

ESKIMO-ALEUT

ALEUT: Aleut (Eastern), Aleut (Western) ESKIMO: Yupik, Inupik (Siberian), Inupik (Labrador)

NA-DENE

Tlingit, Haida ATHAPASKAN-EYAK: Eyak

ATHAPASKAN: Dogrib, Chipewyan (Fort Chipewyan), Chipewyan (Slave), Sarsi, tGalice, Chasta Costa, Hupa, Navajo, Kiowa Apache

MACRO-ALGONQUIAN

Tonkawa, †Tunica, †Wiyot

ALGONQUIAN: EASTERN: Delaware

CENTRAL: Ojibwa, Cree, Menomini, Cheyenne, Blackfoot,

Arapaho, Arapaho (Atsina)

MUSKOGEAN: Alabaman, Hitchiti

SALISH

COAST: Bella Coola, Tillamook

CENTRAL: Clallam, Comox, Twana, Puget Sound Salish, Squamish

OLYMPIC: Cowlitz

INTERIOR: Columbian, Okanagan

WAKASHAN

KWAKIUTLAN: Haisla NOOTKAN: Nootka

MACRO-SIOUAN

Yuchi, Catawba

IROQUOIAN: NORTHERN: Seneca, Oneida

SOUTHERN: Cherokee

SIOUAN: †Biloxi, Crow, Dakota (Teton), Dakota (Assiniboine), Dhegiha

CADDOAN: †Kitsai, Wichita

PENUTIAN

Tsimshian, Coos, Klamath, †Takelma, †Molale, Zuni, Huave, Araucanian SAHAPTIN-NEZ PERCE: Sahaptin, Nez Perce
YAKONAN: Siuslaw
MAIDU: Maidu
MIWOK-COSTANOAN: MIWOK: EASTERN: Sierra Miwok
WESTERN: Lake Miwok
COSTANOAN: †Rumsen
TOTONACAN: Totonac (Zacatlan), Totonac (Villa Juarez)
MIXE-ZOQUE: Mixe (Totontepec), Mixe (Tlahuitoltepec), Zoque, Sayula
MAYAN: CHOLAN: Chol, Chontal, Chorti, Chuj
HUASTECAN: Huastec
KANJOBALAN: Jacaltec, Kekchi
MAMEAN: Teco, Aquacatec, Ixil, Mam, Maya

QUICHEAN: Pocomchi, Pocomchi (San Cristobal), Cakchiquel, Achi, Quiche

TZELTALAN: Tzeltal, Tzotzil, Tojolabal

CHIPAYAN: †Yunga, Chipaya

HOKAN

Karok, Washo, †Chumash, Seri, †Coahuilteco
PALAIHNIHAN: Atsugewi, Achumawi
POMO: Pomo, Kashaya
YUMAN: DELTA-CALIFORNIAN: Maricopa, Kiliwa, Diegueño (Mesa Grande),
Diegueño (Tipai), Cocopa
PAI: Walapai, Mohave, Paipai
TEOUISTLATECAN: Chontal (Highland), Chontal (Lowland)

AZTEC-TANOAN

TANOAN: Kiowa, Tewa, Tiwa
UTO-AZTECAN: NUMIC: Southern Paiute, Northern Paiute, Shoshone
TAKIC: Luiseño, Cahuilla
SONORAN: Pima, Yaqui, Huichol, Cora
AZTECAN: Nahuatl (Puebla), Nahuatl (Orizaba), Hopi

OTO-MANGUEAN

Amuzgo

CHINANTECAN: Chinantec (Usila), Chinantec (Sochiapan)

MIXTECAN: Mixtec (Eastern Jamiltepec), Mixtec (Molinos), Mixtec (Ayutla), Trique

OTOMIAN: NORTHERN: Pame

CENTRAL: Otomi (Temoayan), Otomi (Mezquital), Mazahua

POPOLOCAN: Mazatec

ZAPOTECAN: Zapotec, Chatino

MACRO-CHIBCHAN

Xinca, Warao, Mura, Itonama CHIBCHAN: Waica

PAEZAN: BARBACOAN: Colorado, Cayapa

CHOCO: Waunana, Northern Epera

INTER-ANDINE: Paez

GE-PANO-CARIE

MACRO-CARIB: PEBA-YAGUAN: Yagua

WITOTOAN: Witoto (Murui), Witoto (Muinani), Muinane, Ocaina

CARIB: NORTH: Carib, Trio, Wayana, Hishkaryana, Waiwai

SOUTH: Bacairi

MACRO-GE-BORORO: BORORO: Bororo

MACRO-GE: GE: NORTHWEST: Apinaye, Cayapo

CENTRAL: Chavante

MACRO-PANOAN: MATACO: Mataco

PANO-TACANA: PANO: CENTRAL: Cashibo, Capanahua, Cashinawa,

Amahuaca

SOUTHEAST: Chacobo TACANA: Cavineña, Chama, Tacana

ANDEAN-EQUATORIAL

ANDEAN: ZAPAROAN: Andoa, Auca, Zaparo, Zaparo (Arabela)
QUECHUMARAN: Aymara, Quechua (Ayacucho), Quechua (Bolivian)

Quechua (Puyo Pongo)

EQUATORIAL: Cayuvava

ARAWAKAN: Amuesha

MAIPURAN: NORTHERN: Island Carib, Yucuna, Arawak,

Goajiro, Motilon

PRE-ANDINE: Piro, Campa

SOUTHERN: Baure, Moxo, Terena

WAPISHANAN: Wapishana TUPI: Guarani, Siriono, Kawaib, Tenetehara

GUAHIBO-PAMIGUA: Guahibo

ZAMUCOAN: Ayore

MACRO-TUCANOAN: Movima

TUCANOAN: Tucuna, Guanano

EASTERN: Tucano, Cubeo, Barasano

WESTERN: Secoya, Siona

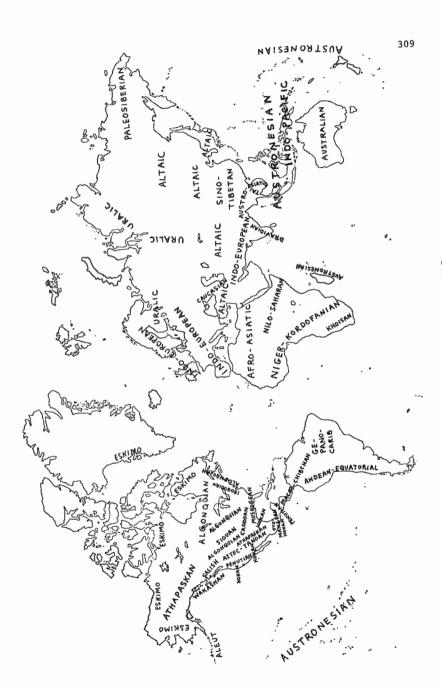
JIVAROAN: Jivaro (Aguaruna), Jivaro (Huambisa), Cofan, Yaruro

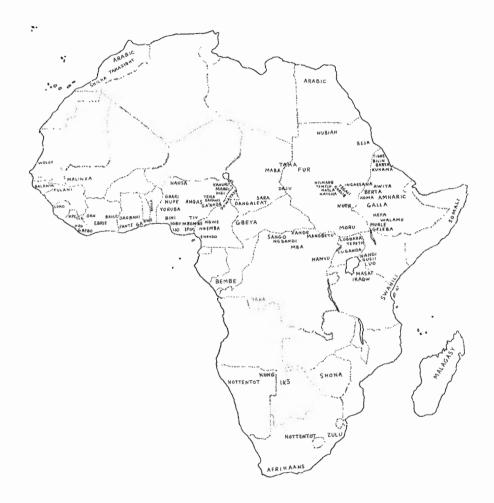
LANGUAGE ISOLATES

Basque, Burushaski, Ainu, Kutenai, Quileute, Wappo, Keres, †Timucua, Tarascan

UNCLASSIFIED

Camsa, Eddystone, Morwap, Suroi



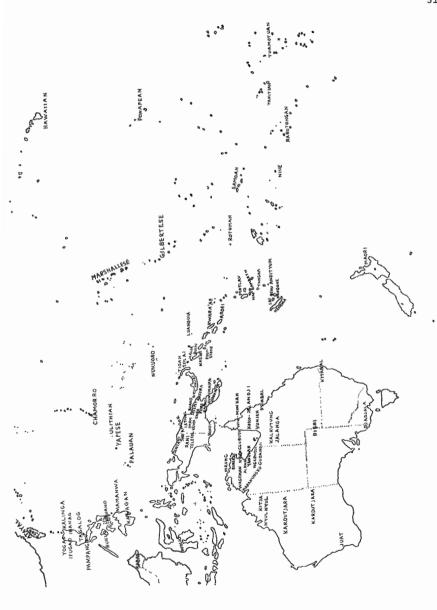


LANGUAGES OF AFRICA



LANGUAGES OF EUROPE







LANGUAGES OF NORTH AMERICA

LANGUAGES OF SOUTH AMERICA

	Languages in Sample	Languages in Family	Number of Speakers	Earliest Known Location	Date of Proto-Language	Earliest Attestation
Afro-Asiatic	29	250	175,000,000	N Africa	8,000-6,000 BC	
Niger-Kordofanian	51	890	181,000,000	WC Africa	8,000-3,000 BC	
Nilo-Saharan	25	120	30,000,000	E Africa		
Khoisan	4	15-50	140,000	S Africa		
Indo-European	73	100	1,738,000,000	SE Europe	3,000 BC	1700 BC
Caucasian	37	35	5,000,000	SE Europe		500 AD
Uralic	23	20	22,000,000	NE Europe/NW Asia	8,000-5,000 BC	1200 AD
Altaic	39	35	225,000,000	C Asia		712 AD
Paleosiberian	8	8	25,000	NE Asia		
Dravidian	10	23	110,000,000	India	3,000-2,000 BC	300 BC
Sino-Tibetan	18	300	625,000,000	E Asia		1500 BC
Austro-Asiatic	17	150	40,000,000	SE Asia	2,000 BC	550 AD
Indo-Pacific	50	700	2,400,000	SE Asia	8,000 BC	1828 AD
Australian	24	200	47,000	SE Asia		1770 AD
Austro-Tai	67	550	181,000,000	SC China		850 AD
Eskimo-Aleut	5	5	83,000	NE Asia	1,000 BC	1742 AD
Na-Dene	12	22	138,000	NE Asia	9,000-5,000 BC	
Macro-Algonquian	13	23	150,000	NE Asia		
Salish	10	16	7,000	NE Asia		
Wakashan	2	6	4,000	NE Asia		
Macro-Siouan	12	18	38,000	NE Asia		
Penutian	43	58	2,650,000	NE Asia		
Hokan	19	26	37,000	NE Asia		
Aztec-Tanoan	15	31	1,080,000	NE Asia		
Oto-Manguean	14	30	1,127,000	NE Asia		
Macro-Chibchan	10	1,000-)	NE Asia		
Ge-Pano-Carib	24	2,000	11,200,000	NE Asia		
Andean-Equatorial	39	2,000		NE Asia		

	Predominant			Fricatives		Later-	Vib-		Vowel	Voice Contrast
Afro-Asiatic	Word Order SVO/SOV/VSO	Stops 29/29		(except h) 29/29	Nasals 29/29	als 29/29	rants 29/29	Tones	Harmony 3/29	in Stops 29/29
Niger-Kordofanian		51/51		51/51	51/51		39/51		12/51	50/51
Nilo-Saharan	SOV/SVO/VSO	25/25		23/25	25/25		25/25	20/25	9/25	24/25
Khoisan	svo/sov	4/4	3/4	4/4	4/4	1/4	4/4	4/4	0/4	
Indo-European		 	59/73	<u> </u>			<u> </u>			3/4
	SVO (SOV/VSO)			73/73	73/73	· · · · · · · · · · · · · · · · · · ·	71/73	7/73	1/73	71/73
Caucasian	SVO/SOV	37/37		37/37	37/37	37/37		0/37	3/37	37/37
Uralic	sov/svo	23/23		23/23	23/23	· · · · · · · · · · · · · · · · · · ·	23/23	0/23	15/23	15/23
Altaic	sov	39/39	,	39/39	39/39	37/39	38/39	2/39	31/39	36/39
Paleosiberian	SOV	8/8	6/8	7/8	8/8	8/8	6/8	0/8	1/8	3/8
Dravidian	sov	10/10	9/10	10/10	10/10	10/10	10/10	0/10	0/10	10/10
Sino-Tibetan	SVO/SOV	18/18	17/18	18/18	18/18	16/18	6/18	17/18	0/18	12/18
Austro-Asiatic	svo	17/17	9/17	17/17	17/17	17/17	16/17	3/17	1/17	16/17
Indo-Pacific	sov	50/50	14/50	40/50	50/50	19/50	34/50	14/50	1/50	37/50
Australian	sov	24/24	2/24	2/24	24/24	24/24	24/24	0/24	0/24	2/24
Austro-Tai	SVO/VSO	67/67	23/67	64/67	67/67	60/67	48/67	7/67	1/67	50/67
Eskimo-Aleut	svo	5/5	2/5	5/5	5/5	5/5	2/5	0/5	0/5	1/5
Na-Dene		12/12	12/12	12/12	12/12	12/12	2/12	7/12	0/12	7/12
Macro-Algonquian		13/13	12/13	13/13	13/13	6/13	2/13	1/13	0/13	3/13
Salish		10/10	10/10	10/10	8/10	10/10	2/10	0/10	0/10	3/10
Wakashan		2/2	2/2	2/2	2/2	2/2	0/2	0/2	0/2	0/2
Macro-Siouan		12/12	8/12	12/12	12/12	4/12	3/12	1/12	0/12	4/12
Penutian	VSO/SVO/SOV	43/43	41/43	43/43	43/43	42/43	24/43	1/43	2/43	26/43
Hokan		19/19	18/19	19/19	19/19	18/19	10/19	2/19	0/19	5/19
Aztec-Tanoan	svo/sov	15/15	15/15	15/15	15/15	10/15	8/15	4/15	0/15	7/15
Oto-Manguean	vso	14/14	11/14	14/14	14/14	14/14	12/14	12/14	1/14	11/14
Macro-Chibchan	sov	10/10	6/10	10/10	9/10	6/10	8/10	1/10	1/10	7/10
Ge-Pano-Carib	sov	24/24	20/24	21/24	24/24	2/24	20/24	4/24	1/24	13/24
Andean-Equatorial	sov/vso/svo	39/39	31/39	37/39	39/39	14/39	33/39	5/39	1/39	19/39

	[1	· ·			T	1		Fric-	1
	Aspiration	Length				1	Retro-	Prenas-	Uvu-	atives	
	Contrast	Contrast					flex	alized	lar		Sibilants
Afro-Asiatic	in Stops 0/29	in Cons.	0/29	6/29	12/29	Velars 0/29	Cons.	Stops 4/29	Stops	28/29	(s,s,]) 29/29
Niger-Kordofanian		4/51	1/51	1/51			3/29		1/51	49/51	50/51
Nilo-Saharan	0/25	9/25	0/25	2/25	15/51	36/51	4/51	13/51	0/25	18/25	23/25
Khoisan	2/4	0/4	4/4		11/25	4/25	8/25	11/25	0/4	4/4	4/4
Indo-European	13/73	· · · · · · · · · · · · · · · · · · ·		2/4	0/4	0/4	1/4	0/4	10/73	63/73	
Caucasian		8/73	0/73	1/73	1/73	1/73	19/73	1/73	-	<u> </u>	73/73
	3/37	17/37		37/37	1/37	0/37	0/37	0/37	37/37	37/37	37/37
Uralic	0/23	12/23	0/23	0/23	0/23	0/23	2/23	0/23	1/23	22/23	23/23
Altaic	3/39	5/39	0/39	1/39	0/39	0/39	0/39	0/39	7/39	35/39	39/39
Paleosiberian	1/8	5/8	0/8	1/8	0/8	0/8	0/8	0/8	8/8	7/8	5/8
Dravidian	1/10	3/10	0/10	0/10	0/10	0/10	9/10	0/10	0/10	8/10	9/10
Sino-Tibetan	15/18	0/18	0/18	0/18	0/18	0/18	3/18	1/18	1/18	12/18	17/18
Austro-Asiatic	10/17	0/17	0/17	0/17	4/17	0/17	8/17	1/17	0/17	5/17	17/17
Indo-Pacific	2/50	0/50	0/50	2/50	1/50	1/50	3/50	18/50	2/50	25/50	37/50
Australian	1/24	1/24	0/24	0/24	0/24	0/24	19/24	1/24	0/24	2/24	0/24
Austro-Tai	8/67	6/67	0/67	1/67	4/67	0/67	10/67	12/67	3/67	46/67	58/67
Eskimo-Aleut	0/5	2/5	0/5	1/5	0/5	0/5	0/5	0/5	4/5	5/5	5/5
Na-Dene	7/12	0/12	0/12	12/12	0/12	0/12	1/12	2/12	3/12	11/12	12/12 '
Macro-Algonquian	1/13	3/13	0/13	0/13	0/13	0/13	2/13	0/13	0/13	9/13	13/13
Salish	0/10	0/10	0/10	10/10	0/10	0/10	0/10	0/10	10/10	10/10	10/10
Wakashan	1/2	0/2	0/2	2/2	0/2	0/2	0/2	0/2	2/2	2/2	2/2
Macro-Siouan	1/12	0/12	0/12	3/12	0/12	0/12	0/12	0/12	0/12	6/12	12/12
Penutian	2/43	3/43	0/43	31/43	14/43	0/43	9/43	1/43	20/43	29/43	42/43
Hokan	3/19	0/19	0/19	7/19	0/19	0/19	4/19	0/19	10/19	17/19	19/19
Aztec-Tanoan	2/15	2/15	0/15	2/15	0/15	0/15	4/15	0/15	3/15	9/15	15/15
Oto-Manguean	1/14	0/14	0/14	1/14	1/14	0/14	3/14	4/14	1/14	7/14	14/14
Macro-Chibchan	3/10	0/10	0/10	2/10	1/10	0/10	2/10	0/10	0/10	5/10	10/10
Ge-Pano-Carib	1/24	0/24	0/24	1/24	1/24	0/24	8/24	0/24	0/24	15/24	19/24
Andean-Equatorial	8/39	1/39	0/39	3/39	2/39	0/39	9/39	1/39	2/39	20/39	34/39

	Glottals	Phar. Fric.	Nasal Vowels	Long Vowels	Front Rounded Vowels	Back Unrounded Vowels
Afro-Asiatic	24/29	11/29	0/29	17/29	0/29	0/29
Niger-Kordofanian	28/51	2/51	27/51	24/51	3/51	1/51
Nilo-Saharan	17/25	1/25	1/25	12/25	0/25	1/25
Khoisan	4/4	0/4	4/4	2/4	0/4	0/4
Indo-European	41/73	2/73	19/73	33/73	15/73	0/73
Caucasian	37/37	23/37	14/37	15/37	12/37	1/37
Uralic	12/23	0/23	0/23	13/23	13/23	5/23
Altaic	21/39	2/39	1/39	23/39	25/39	21/39
Paleosiberian	7/8	1/8	0/8	4/8	0/8	0/8
Dravidian	5/10	0/10	2/10	10/10	0/10	0/10
Sino-Tibetan	16/18	0/18	3/18	5/18	7/18	5/18
Austro-Asiatic	16/17	0/17	6/17	7/17	0/17	2/17
Indo-Pacific	26/50	0/50	2/50	14/50	1/50	0/50
Australian	2/24	0/24	0/24	9/24	0/24	0/24
Austro-Tai	57/67	1/67	2/67	38/67	3/67	5/67
Eskimo-Aleut	4/5	0/5	0/5	3/5	0/5	0/5
Na-Dene	12/12	0/12	8/12	9/12	0/12	0/12
Macro-Algonquian	13/13	0/13	2/13	11/13	0/13	1/13
Salish	10/10	2/10	0/10	3/10	0/10	0/10
Wakashan	2/2	1/2	0/2	1/2	0/2	0/2
Macro-Siouan	12/12	0/12	8/12	8/12	0/12	0/12
Penutian	41/43	0/43	0/43	26/43	0/43	3/43
Hokan	19/19	1/19	1/19	15/19	0/19	0/19
Aztec-Tanoan	15/15	0/15	3/15	11/15	1/15	3/15
Oto-Manguean	14/14	0/14	13/14	3/14	0/14	3/14
Macro-Chibchan	10/10	0/10	6/10	0/10	0/10	0/10
Ge-Pano-Carib	23/24	1/24	9/24	6/24	0/24	10/24
Andean-Equatorial	35/39	0/39	23/39	13/39	0/39	5/39

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ABBREVIATIONS

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- AL: Anthropological Linguistics
- CTIL: Current Trends in Linguistics, The Hague, Mouton.
- IJAL: International Journal of American Linguistics
- JAL: Journal of African Languages
- JAOS: Journal of the American Oriental Society
- JNS: Jazyki narodov SSSR, Leningrad, Nauka.
- JWAL: The Journal of West African Languages
- PL: Pacific Linguistics
- SIL: Summer Institute of Linguistics
- UCPL: University of California Publications in Linguistics
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The Geographical and Genetic Distribution of Linguistic Features

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1. Introduction

The present study is a preliminary attempt to delineate the geographical and genetic distribution of certain linguistic features among the world's languages. By linguistic features I mean simply characteristics of human languages such as a voice contrast among the stop consonants, nasal vowels, tone, or the word order SOV in the simple declarative sentence. Many, if not all, of the areal characteristics discussed here have been recognized elsewhere in the extensive literature on areal linguistics; I have not attempted, however, to document each generalization.

This study is based on a sample of 693 languages, the geographical and genetic affiliation of which are indicated in Table I:

TABLE I: LANGUAGE SAMPLE

Area	Language family	Number of languages in sample
AFRICA	Afro-Asiatic	29
	Niger-Kordofanian	51
	Nilo-Saharan	25
	Khoisan	4
EUROPE	Indo-European	73
	Caucasian	37
	Uralic	23
ASIA	Altaic	39
	Paleosiberian	8
	Dravidian	10
	Sino-Tibetan	18
	Austro-Asiatic	17

¹ A list of the languages utilized, the linguistic information for each language, and the source of that information may be found in Ruhlen (1975).

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OCEANIA	Indo-Pacific Australian Austro-Tai	50 24 67
NORTH AMERICA	Eskimo-Aleut Na-Dene Macro-Algonquian	5 12 13
	Salish Wakashan Macro-Siouan	10 2 12
	Penutian Hokan Aztec-Tanoan	43 19 15 14
SOUTH AMERICA	Oto-Manguean Macro-Chibchan Ge-Pano-Carib Andean-Equatorial	10 24 39

The correlation between language family (or stock) and geographical area is of course only approximate in that several families spill over from one continent to another. Except for a few Afro-Asiatic languages spoken in the Middle East, the languages of all four African families are spoken entirely within Africa. Both the Indo-Iranian branch of Indo-European and the Samoyedic branch of Uralic are located in Asia. All of the Asian families are confined to Asia proper. With the exception of the Kam-Tai branch of Austro-Tai, the Oceanic languages are restricted to Oceania; the Kam-Tai languages (e.g., Thai, Lao) are spoken in Southeast Asia. Practically all the languages of the ten North American families are confined to North America. Eskimo and Aleut are also used in Asia, while two Penutian languages (Araucanian and Chipaya) are spoken in South America. Except for several Macro-Chibchan languages situated in Central America, all three South American phyla are restricted to South America proper. In general, then, letting certain language families represent major geographical regions provides a reasonably accurate approximation to the geographical distribution of linguistic features. Nevertheless, from time to time (cf. Tables VII, XI, XIII, XV, XVII, XXI, XXV) some languages or groups of languages will be shifted to the geographical region where they truly belong, and mention will be made of this fact.

Clearly the language sample is weighted more towards some geographical areas and language families than others. This is partially because certain areas of the world (and certain language families) contain more languages than other parts (or other families). Secondly, the languages of some regions are much better described in the literature. It remains to be seen how truly representative of the world's languages the present sample is.²

² For an intriguing discussion of language sampling, see Sherman (1975).

It is well known that the same sound may function differently in different languages. In language A, [n] may be an independent phoneme capable of distinguishing lexical items, while in language B, [n] occurs only before the velar stops k and g as a conditioned allophone of \ln (or perhaps/N/). Thus, although both A and B have the phone [n], only A has the phoneme $/\eta$. In dealing with the geographical distribution of various types of phonological segments we will in all cases restrict our discussion to the phonemic rather than the phonetic inventory of a language. Specifically, the segment inventory of each language in our sample consists of the chief ('elsewhere') allophone for each (classical) phoneme. The voiceless stops of English, for example, are considered to be /ph, th, kh/ rather than /p, t, k/, since the former represent the 'normal' sound in English, the aspiration of which may be conditionally suppressed in specific environments (e.g., after s, word finally). Certainly the phonetic distribution of various segment types will be (to an undetermined extent) broader than the phonological distribution which forms the subject of our investigation.

Although it is in most instances obvious which allophone is basic and which conditioned, there are cases where such a choice is difficult to make. The limitations of our approach should therefore be borne in mind throughout the discussion.

2. Consonants

All languages possess consonants and vowels, but the particular kinds vary from language to language. Certain categories (e.g., stop, nasal), and even segments (e.g., a, t, n), are virtually universal, while other categories (e.g., implosive, click) and segments $(\bar{y}, k\hat{p})$ are less widely attested in the world's languages.

Stops. All the languages in our sample have stops.³ Almost all languages have stops made at the bilabial, apical, and velar points of articulation; Tahitian and Chavante lack velar stops, Hawaiian and (the closely related) Luanguia lack dental stops, and a number of languages (e.g., Aleut, Cherokee, Oneida, Tlingit, Waiwai) have no bilabial stops. Numerous languages have, in addition, glottal, palatal, uvular, or retroflex stops. A few languages (e.g., Tamil, Maung, Nez Perce) oppose dental and alveolar stops.

Glottal stop [7] occurs in roughly half the languages, uvular stops [q, G] in 20% of the sample, while labial-velars [kp, gb] are found in only 6%. [7] is common throughout the world, but is relatively rare in certain families. Although [kp, gb] characterize 71% of the Niger-Kordofanian languages, they are practically nonexistent elsewhere. Four Nilo-Saharan languages

³ See the Appendix for the distribution, according to language family, of each feature discussed.

(Mangbetu, Mamvu, Logbara, Moru) located on the northeastern border of the Niger-Kordofanian family, one Indo-European language (Saramaccan, an English-based Creole spoken by 'Bush Negroes' in Surinam), and one Indo-Pacific language (Yupna) spoken in New Guinea are also reported to have labial-velars. Like clicks, [kp, gb] are virtually restricted to Africa.

Prenasalization of stop consonants occurs in 10% of the language sample (68/693), but these languages are found chiefly in Africa and Oceania. Two Asian languages, seven North American languages, and two South American languages also have prenasalized stops. In Africa, 26% of the languages (28/109) have prenasalized stops, while in Oceania the figure is 22% (31/141). Ignoring other factors which affect systems of stops (e.g., aspiration, glottalization, length, palatalization, labialization) and focusing on the features of voicing and prenasalization, there are eight ways in which prenasalization may interact with voicing. Of these eight systems, two are common, two are rare, and four are unattested, as Table II shows.

TABLE II: PRENASALIZED STOPS

	System	Languages in Sample
1	p, ^m b	31
2	p, b, ^m b	30
3	p, ^m p, b, ^m b	5
4	p,mp, b	2
5	mp, b	0
6	mp,mb	0
7	p, m p, m b	0
8	^m p, b, ^m b	0

In both of the common systems prenasalization affects the voiced stop, either in contrast to another voiced stop which is not prenasalized (2), or in addition to the voicing feature itself (1). In the rare systems a prenasalized voiceless stop contrasts with a plain voiceless stop (4), or both the voiced and voiceless stops have prenasalized pertners (3). Three of the four unattested systems involve a prenasalized voiceless stop without a plain voiceless one (5, 6, 8). The affinity between prenasalization and voicing is evident in Table II.

Seventy-two percent of the languages in our sample exhibit a voice contrast in the stops (i.e., /p, t, k/ vs. /b, d, g/). Although a voice contrast is quite common everywhere in the world, it is nonetheless more frequent in Africa, Europe, and Asia than it it is Oceania and the New World:

TABLE III: VOICE CONTRAST IN STOPS

Africa	106/109 = 97%
Europe	123/133 = 92%

Asia	77/92 = 84%
Oceania	89/141 = 63%
North America	67/145 = 46%
South America	39/73 = 53%
Total	501/693 = 72%

An aspiration contrast among the voiceless stops (i.e., /p, t, k/ vs. /ph, th, kh/) is much less prevalent than a voice contrast, but it still enjoys a wide geographical distribution, with highest concentration in Asia:

TABLE IV: ASPIRATION CONTRAST IN STOPS4

Africa	6/109 = 6%
Europe	16/133 = 12%
Asia	30/92 = 33%
Oceania	11/141 = 8%
North America	18/145 = 12%
South America	12/73 = 16%
Total	93/693 = 13%

Affricates. With the exception of Australia in particular, and Oceania in general, affricates are widely attested everywhere in the world:

TABLE V: AFFRICATES

Africa	65/109 = 60%
Europe	115/133 = 86%
Asia	75/92 = 82%
Oceania	39/141 = 28%
North America	131/145 = 90%
South America	57/73 = 78%
Total	482/693 = 70%

The relative dearth of phonemic affricates in Australia (2/24 = 8%) is no doubt related to the lack of fricatives in those languages, 5 and is just one of several phonological eccentricities characterizing Australian languages.

Fricatives. Except in Oceania, almost all of the world's languages have one kind of fricative or another. Only 36 of the 693 languages in our sample lack fricatives altogether. Of these 36 languages, one is found in Africa, three in South America, and the remaining 32 in Oceania (22 in Australia,

⁴ If the Indo-European languages spoken in Asia were counted with the other Asian languages - rather than with the European languages as we have done - then the European percentage would fall to 5%, though the Asian figure would remain essentially

⁵ Cf. Jakobson (1968:55): "A so-called half-stop consonant (or affricate) . . . is acquired by the child only after the fricative of the same series."

seven in New Guinea, two on Bougainville, and one on the Gilbert Islands):

TABLE VI: FRICATIVES

Africa	108/109 = 99%
Europe	133/133 = 100%
Asia	92/92 = 100%
Oceania	109/141 = 77%
North America	145/145 = 100%
South America	70/73 = 96%
Total	657/693 = 95%

One of the prime reasons for the strength of the category 'fricative' is the almost equal strength of the subcategory 'sibilant' (i.e. s, s, š, š):

TABLE VII: SIBILANTS⁶

Africa	105/109 = 96%
Europe	133/133 = 100%
Asia	87/93 = 94%
Oceania	95/140 = 68%
North America	144/144 = 100%
South America	63/74 = 85%
Total	627/693 = 90%

Only 66 languages in our sample lack sibilants, and 45 of these are found in Oceania (all 24 Australian languages, 13 Indo-Pacific languages on New Guinea and Bougainville, and nine Austro-Tai languages, including five Polynesian). Four African, six Asian, and 11 South American languages also lack sibilants.

Another widely dispersed category of fricatives, the glottals [h, h], are commonplace everywhere but Australia. Slightly under two-thirds of the African, European, and Asian languages use glottal fricatives, while the percentage is considerably lower in Oceania (especially among Australian [0/24] and Indo-Pacific [17/50] languages), and markedly higher in the New World:

TABLE VIII: GLOTTAL FRICATIVES

Africa	66/109 = 61%
Europe	87/133 = 65%

⁶ In Table VII, Lakkia, an Austro-Tai language spoken in South China, and Araucanian, a Penutian language spoken in Chile — both of which lack sibilants — have been included under Asia and South America, respectively.

Asia	57/92 = 62%
Oceania	60/141 = 43%
North America	117/145 = 81%
South America	58/73 = 79%
Total	445/693 = 64%

Pharyngeal fricatives [h, s] are probably the rarest type of fricative; they are characteristic of (some) Afro-Asiatic and Caucasian languages, but are scarce elsewhere:

TABLE IX: PHARYNGEAL FRICATIVES7

Africa	14/109 = 13	%
Europe	25/133 = 19	%
Asia	3/92 = 3	%
Oceania	1/141 = 1	%
North America	4/145 = 3	%
South America	1/73 = 1	%
Total	48/693 = 7	%

Nasals. After stops, which are used in every human language, nasal consonants (m, n, n, ñ, n, n) come closer to universality than any other consonant type. Except for two Salish languages (Twana and Puget Sound Salish) and one South American language (Mura), every language in our sample has nasal consonants. Furthermore, both Salish languages possess m and n as marginal speech sounds. Thompson and Thompson (1972) present a thorough discussion of languages lacking nasal consonants, and Crothers (1975) investigates nasal consonant systems cross-linguistically.

Laterals. Laterals occur commonly in languages around the world. They are, nevertheless, often absent in Oceanic (particularly Indo-Pacific) and South American languages:

TABLE X: LATERALS

Africa	97/109 = 89%
Europe	133/133 = 100%
Asia	88/92 = 96%
Oceania	103/141 = 73%
North America	123/145 = 85%
South America	22/73 = 30%
Total	566/693 = 82%

⁷ It is not uncommon in the linguistic literature for the term 'pharyngeal' to be used to denote the glottal fricative h; it would, therefore, not be surprising if some of the pharyngeal fricatives listed in Table IX were really glottal fricatives.

Vibrants. I include in the class of vibrants those sounds represented in the literature by various kinds of 'r's' (e.g., r, r, r, R, 1, 1). In one direction vibrants impinge on laterals, with which they form the class of liquids (see below); many languages have a single liquid segment which has a lateral allophone in some environments and a vibrant allophone in others (e.g., Japanese). Other languages have a single liquid which has characteristics of both a lateral and a vibrant; thus, the only liquid in Gahuku, Pima, Wayana, and Cubeo is a lateral flap. In another direction, vibrants run into the class of fricatives; the IPA phonetic alphabet recognizes this area of ambiguity in representing voiced alveolar and uvular fricatives with symbols: [1] and [1], respectively.

Vibrants are frequent everywhere, but the percentage of languages without vibrants is much higher in North America than anywhere else in the world:

TABLE XI: VIBRANTS8

Africa	97/109 =	89%
Europe	131/131 =	100%
Asia	76/92 =	83%
Oceania	106/141 =	75%
North America	65/145 =	45%
South America	61/75 =	81%
Total	536/693 =	77%

Liquids. Although 127 languages in our sample lack laterals and 157 lack vibrants, only 32 languages lack both. That is, only 5% of the languages lack liquids altogether:

TABLE XII: LIQUIDS

Africa	108/109 = 99%
Europe	133/133 = 100%
Asia	92/92 = 100%
Oceania	133/141 = 94%
North America	130/145 = 90%
South America	65/73 = 89%
Total	661/693 = 95%

All but one (Efik) of the liquidless languages are found in Oceania (the Indo-Pacific phylum), North America (chiefly the Central Algonquian and Siouan languages), or South America.

⁸ Saramaccan and Djuka, both English-based creoles spoken in Surinam, are counted under South America in Table XI.

Approximately two-thirds of the languages have both laterals and vibrants, but this figure shows marked geographical variation, ranging from 100% in Europe to only 25% in South America:

TABLE XIII: LANGUAGES WITH BOTH LATERALS AND VIBRANTS 9

Africa	86/109 = 79%
Europe	131/131 = 100%
Asia	73/92 = 79%
Oceania	76/141 = 54%
North America	58/145 = 40%
South America	19/75 = 25%
Total	443/693 = 64%

Bhat (1974) contains an extensive investigation of the phonology of liquid consonants.

Long Consonants. Because long consonants are very often treated as sequences of two identical short consonants, they are easy to overlook in the literature. It is to be expected, therefore, that the actual incidence of long consonants is higher than Table XIV suggests:

TABLE XIV: LONG CONSONANTS

Africa	29/109 = 279	%
Europe	37/133 = 289	%
Asia	13/92 = 149	%
Oceania	7/141 = 5	%
North America	10/145 = 7	%
South America	1/73 = 19	%
Total	97/693 = 149	— %

Length is contrastive in consonants most often in African and European languages; it is least often so in Oceania and the New World.

Retroflex Consonants. Retroflex consonants, typical of most languages on the Indian subcontinent and in Australia, are found with low frequency in all parts of the world:

TABLE XV: RETROFLEX CONSONANTS10

Africa	16/109 =	15%
Europe	5/107 =	5%

⁹ Saramaccan and Djuka are counted under South America in Table XIII.

¹⁰ In Table XV, the Indo-Iranian branch of Indo-European has been counted under Asia.

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Asia	36/118 = 31%
Oceania	32/141 = 23%
North America	23/145 = 16%
South America	19/73 = 26%
Total	$\overline{131/693} = 19\%$

Whereas in India and Australia a single language may have retroflex stops, fricatives, nasals, laterals, and vibrants, in other areas languages possess only a single retroflex segment. For an interesting cross-linguistic study of retroflexion, see Bhat (1973).

Clicks. As normal speech sounds, clicks are found only in Southern Africa, primarily in the Khoisan family. Apparently all Khoisan languages have a series of clicks, and these sounds have been borrowed by several neighboring Bantu languages, of which Zulu is the only example in our sample. It is nevertheless worth mentioning that clicks occur in many languages as 'interjections,' that is, a sound with a specific meaning. Although phonologists generally do not accord too much attention to such marginal speech sounds (so that their incidence in the world's languages is probably much higher than the literature would lead one to believe), at least six languages in our sample use clicks as interjections (Luo, English, Rumanian, Asmat, Auca, and Jivaro).

Ejectives. 'Glottalized' consonants are variously described in the literature, and ejection or implosion is often not explicitly mentioned. I have therefore grouped voiceless postglottalized segments with the ejectives, and voiced preglottalized segments with the implosives. This is not to deny the very real phonetic differences between various kinds of 'glottalized' consonants.¹¹ Greenberg (1970) presents an extensive crosslinguistic investigation of glottalized consonants.

Ejectives are found in 11 African languages (primarily in the Northeast and South), all 37 Caucasian languages plus one Indo-European neighbor (Ossetic) in the Caucasus, throughout North America, particularly along the Northwest Coast, from Alaska to California, and in Southern Mexico. In Europe (except the Caucasus), Asia, Oceania, and most of Africa and South America ejectives rarely occur:

TABLE XVI: EJECTIVES

Africa	11/109 =	=	10%
Europe	38/133 =	=	29%
Asia	2/92 =	=	2%

¹¹ Cf. Ladefoged (1964).

Oceania North America	3/141 = 2% 69/145 = 48%
South America	6/73 = 8%
Total	129/693 = 19%

Implosives. Implosives are an areal characteristic of Sub-Saharan Africa, Southeast Asia, and Southern Mexico; elsewhere they appear sporadically, if at all:

TABLE XVII: IMPLOSIVES12

Africa	38/109 = 35%
Europe	1/132 = 1%
Asia	5/93 = 5%
Oceania	5/141 = 4%
North America	15/145 = 10%
South America	4/73 = 5%
Total	68/693 = 10%

Like labial-velars and clicks, implosives are an outstanding trait of Sub-Saharan languages. In Southeast Asia they occur in both Austro-Tai and Austro-Asiatic languages, while in Southern Mexico they are found in one Oto-Manguean and 13 Mayan languages.

3. Vowels

The most common pattern for non-long oral vowels is the five-vowel system of Classical Latin:

Slightly more than a quarter of the languages in our sample exhibit this pattern, which is prevalent in all parts of the world:

a a	VOWEL PATTERN
Africa	21/109 = 19%
Europe	30/133 = 23%
Asia	20/92 = 22%
Oceania	57/141 = 40%

¹² In Table XVII Sindhi, an Indic Language of Pakistan, has been counted under Asia.

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North America South America	48/145 = 33% $11/73 = 15%$
Total	$\overline{187/693} = 27\%$

Furthermore, three common variants of (1) account for another 18% of the sample. The Latin system plus schwa:

is found in 7% (47/693) of the languages; the basic vowel triangle:

occurs in 6% (40/693) of the sample; and the Italian system:

in another 6% (41/693). Thus, only four patterns account for almost half of the vowel systems.

Front Rounded Vowels. The vowel systems of virtually all languages contain front unrounded and back rounded vowels.¹³ In addition, some languages also possess front rounded (y, ø,œ) and/or back unrounded vowels (tu, Y, A). Front rounded vowels occur in 12% of the languages in our sample, but 90% of these languages are located in Europe or Asia:

TABLE XIX: FRONT ROUNDED VOWELS

Africa	3/109 =	3%
Europe	40/133 = 3	0%
Asia	32/92 = 3	5%
Oceania	4/141 =	3%
North America	1/145 =	1%
South America	0/73 =	0%
Total	80/693 = 1	2%

¹³ Several Caucasian languages (e.g., Abkhazian, Circassian) are exceptions to this generalization.

Back Unrounded Vowels. Back unrounded vowels are slightly less common than front rounded vowels, but their geographical distribution differs markedly:

TABLE XX: BACK UNROUNDED VOWELS

Africa	2/109 = 2%
Europe	6/133 = 5%
Asia	28/92 = 30%
Oceania	5/141 = 4%
North America	10/145 = 7%
South America	15/73 = 21%
Total	66/693 = 10%

While most languages with back unrounded vowels also possess back rounded vowels, in South America it is not unusual for a language to have either [u] or [v] without the corresponding rounded vowel (i.e., [u], [o], respectively).

Nasal Vowels. Nasal vowels occur frequently in Sub-Saharan Africa (except the northeastern portion), Northern India, central Mexico, and South America. They are less prevalent in Europe, the Caucasus, Southeast Asia (including China), and North America. Nasal vowels are apparently quite rare in North and East Africa, North Asia, Australia and Oceania:

TABLE XXI: NASAL VOWELS14

Africa	32/109 = 29%
Europe	23/107 = 21%
Asia	22/118 = 19%
Oceania	4/141 = 3%
North America	35/145 = 24%
South America	38/73 = 52%
Total	154/693 = 22%

A detailed investigation of nasal vowels, from the perspective of language universals, is contained in Ruhlen (to appear).

Long Vowels. Long vowels are found in roughly half of the African, European, Asian, and Oceanic languages in our sample. They are most common in North America, and least common in South America:

¹⁴ In Table XXI, the Indo-Iranian languages have been counted under Asia.

TABLE XXII: LONG VOWELS

Africa	55/109 = 50%
Europe	61/133 = 46%
Asia	49/92 = 53%
Oceania	61/141 = 43%
North America	90/145 = 62%
South America	19/73 = 26%
Total	335/693 = 48%

4. Suprasegmentals

Like many segmental features investigated in sections 2 and 3, the suprasegmental features of tone and vowel harmony exhibit a skewed geographical distribution.

Tone. Although roughly a quarter of the languages in our sample are tonal, this figure ranges from a high of 92% in Sub-Saharan Africa to a low of 5% in Europe

TABLE XXIII: TONE

Africa	76/109 = 70%
Europe	7/133 = 5%
Asia	22/92 = 24%
Oceania	21/141 = 15%
North America	28/145 = 19%
South America	10/73 = 14%
Total	164/693 = 24%

Vowel Harmony. Over half of the languages with vowel harmony belong to either the Uralic or Altaic family. Various types of vowel harmony are also common in Africa, and sporadic in Oceania and the New World:

TABLE XXIV: VOWEL HARMONY

Africa	24/109 = 22%
Europe	19/133 = 14%
Asia	33/92 = 36%
Oceania	2/141 = 1%
North America	3/145 = 2%
South America	3/73 = 4%
Total	84/693 = 12%

Ultan (1973) examines vowel harmony from a cross-linguistic perspective.

5. Word Order

As examples of grammatical features we have examined the order of the subject, verb, and object in a sentence, and the order of a noun and modifying adjective in a noun phrase.

Subject-Verb-Object. As first pointed out in Greenberg (1963), of the six possible orders for subject (S), verb (V), and object (O) (in declarative sentences with nominal subject and object) only three usually appear in the world's languages: SOV, SVO, and VSO. Our sample contained information on the order of the subject, verb, and object in 406 languages. The most frequent order, found in about half the languages, was verb-final. Verb-medial was somewhat less common (37%), and verb-initial the least frequent of all (11%):

TABLE XXV: SENTENCE WORD ORDER15

	SOV	SVO	VSO
Africa	22/82 = 27%	50/82 = 61%	10/82 = 12%
Europe	30/83 = 36%	51/83 = 61%	3/83 = 4%
Asia	87/102 = 85%	14/102 = 14%	0/102 = 0%
Oceania	50/83 = 60%	17/83 = 20%	16/83 = 19%
North America	10/36 = 28%	15/36 = 42%	11/36 = 31%
South America	11/20 = 55%	5/20 = 25%	4/20 = 20%
Total	210/406 = 52%	152/406 = 37%	44/406 = 11%

Sub-Saharan Africa has predominantly SVO order in all but the north-eastern portion, where both SOV and VSO are found. In North Africa and the Middle East we find VSO alternating with SVO. Except for Basque on the Iberian Peninsula (which is SOV), and the Celtic languages in Ireland, Wales, and Northwestern France (which are VSO), most of Europe is solidly SVO. The order SOV is, however, common on the eastern fringe of Europe in a number of Caucasian and Uralic languages. The dominant order in Asia is SOV, though Southeast Asia (including China) appears to prefer SVO. In Oceania both Australia and New Guinea are overwhelmingly SOV, while the Philippines and Polynesia favor VSO. Elsewhere in Oceania both SVO and VSO are encountered. Since our sample has relatively few North and South American languages, general patterns of distribution are difficult to discern. Nevertheless, in North America we can point to a number of verb-initial languages on the Northwest Coast and in Southern Mexico and Guatemala. In much of North America SOV

¹⁵ In Table XXV, the Indo-Iranian languages have been counted under Asia.

and SVO both occur. Our data on South America are scant, but seem to indicate a preference for the verb-final pattern.

Eleven languages in our sample have a basic order other than the three common types shown in Table XXV. Eight languages apparently have the order VOS (Malagasy, Batak, Gilbertese, Chol, Pocomchi, Tzeltal, Chontal, and Mazatec) and one language (Mamvu), OSV. In addition, two languages have VOS alternating with OVS (Coos and Siuslaw).

Adjective-Noun. An adjective (A) modifying a noun (N) may either precede (AN) or follow (NA) it. Each pattern occurs in half the languages in our sample. Africa and Oceania generally favor the order NA, while in Europe and Asia AN is most common. Both orders seem to be of roughly equal frequency in North and South America, though a larger sample here would be desirable:

TABLE XXVI: NOUN PHRASE WORD ORDER

	NA	AN	
Africa	66/78 = 85%	12/78 = 15%	
Europe	23/106 = 22%	83/106 = 78%	
Asia	10/75 = 13%	65/75 = 87%	
Oceania	64/71 = 90%	7/71 = 10%	
North America	19/38 = 50%	19/38 = 50%	
South America	12/19 = 63%	7/19 = 37%	
Total	194/387 = 50%	$\frac{193/387 = 50\%}{193/387}$	
rotar	194/307 - 30%	193/367 - 30%	

6. Conclusion

This study has investigated the geographical and genetic distribution of a number of linguistic features, both phonological and grammatical. Although certain features are universal, or nearly so, others exhibit a sharply skewed geographical and/or genetic distribution. Stops, fricatives, nasals, and liquids occur in the vast majority of the world's languages, while clicks, labial-velars, pharyngeal fricatives, and front rounded vowels are relatively rare. In between these two extremes we encounter features such as affricates, long vowels, and the SOV word order, which occur in a sizeable proportion, but by no means all, of the world's languages.

It is obvious of course that the most widely distributed features are those which linguists have traditionally considered the 'simplest,' while the rarest features are those which are in some sense 'complex.' Another way of looking at the question is in terms of hierarchical structure, where all languages are forced to use the basic elements of the hierarchy, but each language is then free to embellish the common pattern in a variety of ways. A third way of viewing the synchronic distributional patterns sketched in this paper is in terms of diachrony. If clicks, for example, are

exceedingly rare, we may interpret this to mean that the diachronic process (or, more likely, series of individual processes) which produces them depends on a set of variables which seldom co-occur in human language. On the other hand, the common appearance of long vowels or voiced stops in languages around the world is certainly due to the high frequency of the phonological processes which create them. Finally, we might remark that even in languages without phonemic long vowels or voiced stops, such features are frequently lurking just below the phonemic surface, waiting to make their appearance should the appropriate set of changes take place. This is not true of clicks, labial-velars or pharyngeal fricatives, which are usually absent from the allophony as well as from the phonemics of a language.

There are certainly other ways of interpreting the distributional patterns found in human language (e.g., child language acquisition, language contact). It seems reasonable, however, to follow Jakobson in considering all such perspectives as merely different facets of the same underlying phenomenon. Furthermore, it is likely that different modes of research will be fruitful in arriving at a deeper understanding of the geographical and genetic distribution of linguistic features, and it is toward that end that the empirical evidence of the present study is offered.

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	Stops	;	q/G	kp/gb	Prenasalized Stops
AFRO-ASIATIC NIGER-KORDOFANIAN NILO-SAHARAN KHOISAN	29/29 = 100% 51/51 = 100% 25/25 = 100% 4/4 = 100%	23/29 = 79% $7/51 = 14%$ $7/25 = 28%$ $3/4 = 75%$	11/29 = 38% 1/51 = 2% 0/25 = 0% 0/4 = 0%	0/29 = 0% 36/51 = 71% 4/25 = 16% 0/4 = 0%	4/29 = 14% $13/51 = 25%$ $9/25 = 36%$ $0/4 = 0%$
INDO-EUROPEAN CAUCASIAN URALIC	73/73 = 100% 37/37 = 100% 23/23 = 100%	3/73 = 4% 32/37 = 86% 4/23 = 17%	$ \begin{array}{r} 10/73 = 14\% \\ 37/37 = 100\% \\ 1/23 = 4\% \end{array} $	1/73 = 1% 0/37 = 0% 0/23 = 0%	1/73 = 1% 0/37 = 0% 0/23 = 0%
ALTAIC PALEOSIBERIAN DRAVIDIAN SINO-TIBETAN AUSTRO-ASIATIC	39/39 = 100% 8/8 = 100% 10/10 = 100% 18/18 = 100% 17/17 = 100%	5/39 = 13% 6/8 = 75% 1/10 = 10% 8/18 = 44% 11/17 = 65%	7/39 = 18% 8/8 = 100% 0/10 = 0% 1/18 = 6% 0/17 = 0%	0/39 = 0% 0/8 = 0% 0/10 = 0% 0/18 = 0% 0/17 = 0%	0/39 = 0% $0/8 = 0%$ $0/10 = 0%$ $1/18 = 6%$ $1/17 = 6%$
INDO-PACIFIC AUSTRALIAN AUSTRO-TAI	50/50 = 100% 24/24 = 100% 67/67 = 100%	19/50 = 38% $2/24 = 8%$ $43/67 = 64%$	2/50 = 4% 0/24 = 0% 3/67 = 4%	1/50 = 2% 0/24 = 0% 0/67 = 0%	18/50 = 36% 1/24 = 4% 12/67 = 18%
ESKIMO-ALEUT NA-DENE MACRO-ALGONQUIAN SALISH WAKASHAN MACRO-SIOUAN PENUTIAN HOKAN AZTEC-TANOAN OTO-MANGUEAN	5/5 = 100% $12/12 = 100%$ $13/13 = 100%$ $10/10 = 100%$ $2/2 = 100%$ $12/12 = 100%$ $43/43 = 100%$ $19/19 = 100%$ $15/15 = 100%$ $14/14 = 100%$	0/5 = 0% $12/12 = 100%$ $8/13 = 62%$ $10/10 = 100%$ $2/2 = 100%$ $7/12 = 58%$ $37/43 = 86%$ $18/19 = 95%$ $13/15 = 87%$ $13/14 = 93%$	4/5 = 80% $3/12 = 25%$ $0/13 = 0%$ $10/10 = 100%$ $2/2 = 100%$ $0/12 = 0%$ $20/43 = 47%$ $10/19 = 53%$ $3/15 = 20%$ $1/14 = 7%$	0/5 = 0% $0/12 = 0%$ $0/13 = 0%$ $0/10 = 0%$ $0/2 = 0%$ $0/12 = 0%$ $0/13 = 0%$ $0/143 = 0%$ $0/19 = 0%$ $0/15 = 0%$ $0/14 = 0%$	0/5 = 0% $2/12 = 17%$ $0/13 = 0%$ $0/10 = 0%$ $0/2 = 0%$ $0/12 = 0%$ $1/43 = 2%$ $0/19 = 0%$ $0/15 = 0%$ $4/14 = 29%$
MACRO-CHIBCHAN GE-PANO-CARIB ANDEAN-EQUATORIAL	10/10 = 100% 24/24 = 100% 39/39 = 100%	7/10 = 70% $15/24 = 62%$ $21/39 = 54%$	0/10 = 0% 0/24 = 0% 2/39 = 5%	0/10 = 0% 0/24 = 0% 0/39 = 0%	0/10 = 0% 0/24 = 0% 1/39 = 3%
TOTAL	693/693 = 100%	337/693 = 49%	136/693 = 20%	42/693 = 6%	68/693 = 10%

154 Linguistic Studies offered to Joseph Greenberg

	Voice Contrast In Stops	Aspiration Contrast In Stops	Affricates	Fricatives	Sibilants
AFRO-ASIATIC	29/29 = 100%	0/29 = 0%	22/29 = 76%	29/29 = 100%	29/29 = 100%
NIGER-KORDOFANIAN	50/51 = 98%	4/51 = 8%	24/51 = 47%	51/51 = 100%	50/51 = 98%
NILO-SAHARAN	24/25 = 96%	0/25 = 0%	16/25 = 64%	24/25 = 96%	22/25 = 88%
KHOISAN	3/4 = 75%	2/4 = 50%	3/4 = 75%	4/4 = 100%	4/4 = 100%
INDO-EUROPEAN	71/73 = 97%	13/73 = 18%	59/73 = 81%	73/73 = 100%	73/73 = 100%
CAUCASIAN	37/37 = 100%	3/37 8%	37/37 = 100%	37/37 = 100%	37/37 = 100%
URALIC	15/23 = 65%	0/23 = 0%	19/23 = 83%	23/23 = 100%	23/23 = 100%
ALTAIC	36/39 = 92%	3/39 = 8%	34/39 = 87%	39/39 = 100%	39/39 = 100%
PALEOSIBERIAN	3/8 = 37%	1/8 = 12%	6/8 = 75%	8/8 = 100%	5/8 = 62%
DRAVIDIAN	10/10 = 100%	1/10 = 10%	9/10 = 90%	10/10 = 100%	9/10 = 90%
SINO-TIBETAN	12/18 = 67%	15/18 = 83%	17/18 = 94%	18/18 = 100%	17/18 = 94%
AUSTRO-ASIATIC	16/17 = 94%	10/17 = 59%	9/17 = 53%	17/17 = 100%	17/17 = 100%
INDO-PACIFIC	37/50 = 74%	2/50 = 4%	14/50 = 28%	41/50 = 82%	37/50 = 74%
AUSTRALIAN	2/24 = 8%	1/24 = 4%	2/24 = 8%	2/24 = 8%	0/24 = 0%
AUSTRO-TAI	50/67 = 75%	8/67 = 12%	23/67 = 34%	66/67 = 99%	58/67 = 87%
ESKIMO-ALEUT	1/5 = 20%	0/5 = 0%	2/5 = 40%	5/5 = 100%	5/5 = 100%
NA-DENE	7/12 = 58%	7/12 = 58%	12/12 = 100%	12/12 = 100%	12/12 = 100%
MACRO-ALGONQUIAN	3/13 = 23%	1/13 = 8%	12/13 = 92%	13/13 = 100%	13/13 = 100%
SALISH	3/10 = 30%	0/10 = 0%	10/10 = 100%	10/10 = 100%	10/10 = 100%
WAKASHAN	0/2 = 0%	1/2 = 50%	2/2 = 100%	2/2 = 100%	2/2 = 100%
MACRO-SIOUAN	4/12 = 33%	1/12 = 8%	8/12 = 67%	12/12 = 100%	12/12 = 100%
PENUTIAN	26/43 = 60%	2/43 = 5%	41/43 = 95%	43/43 = 100%	42/43 = 98%
HOKAN	5/19 = 26%	3/19 = 16%	18/19 = 95%	19/19 = 100%	19/19 = 100%
AZTEC-TANOAN	7/15 = 47%	2/15 = 13%	15/15 = 100%	15/15 = 100%	15/15 = 100%
OTO-MANGUEAN	11/14 = 79%	1/14 = 7%	11/14 = 79%	14/14 = 100%	14/14 = 100%
MACRO-CHIBCHAN	7/10 = 70%	3/10 = 30%	6/10 = 60%	10/10 = 100%	10/10 = 100%
GE-PANO-CARIB	13/24 = 54%	1/24 = 4%	20/24 = 83%	22/24 = 92%	18/24 = 75%
ANDEAN-EQUATORIAL	19/39 = 49%	8/39 = 21%	31/39 = 79%	38/39 = 97%	34/39 = 87%
TOTAL	501/693 = 72%	93/693 = 13%	482/693 = 70%	657/693 = 95%	626/693 = 90%

	Glottal Fricatives	Pharyngeal Fricatives	Nasals	Laterals	Vibrants
AFRO-ASIATIC NIGER-KORDOFANIAN NILO-SAHARAN KHOISAN	20/29 = 69% 26/51 = 51% 16/25 = 64% 4/4 = 100%	11/29 = 38% $2/51 = 4%$ $1/25 = 4%$ $0/4 = 0%$	29/29 = 100% $51/51 = 100%$ $25/25 = 100%$ $4/4 = 100%$	29/29 = 100% 42/51 = 82% 25/25 = 100% 1/4 = 25%	29/29 = 100% 39/51 = 76% 25/25 = 100% 4/4 = 100%
INDO-EUROPEAN CAUCASIAN URALIC	41/73 = 56% 37/37 = 100% 9/23 = 39%	2/73 = 3% 23/37 = 62% 0/23 = 0%	73/73 = 100% 37/37 = 100% 23/23 = 100%	73/73 = 100% 37/37 = 100% 23/23 = 100%	71/73 = 97% $37/37 = 100%$ $23/23 = 100%$
ALTAIC PALEOSIBERIAN DRAVIDIAN SINO-TIBETAN AUSTRO-ASIATIC	19/39 = 49% 2/8 = 25% 5/10 = 50% 16/18 = 89% 15/17 = 88%	2/39 = 5% $1/8 = 12%$ $0/10 = 0%$ $0/18 = 0%$ $0/17 = 0%$	39/39 = 100% 8/8 = 100% 10/10 = 100% 18/18 = 100% 17/17 = 100%	37/39 = 95% 8/8 = 100% 10/10 = 100% 16/18 = 89% 17/17 = 100%	38/39 = 97% 6/8 = 75% 10/10 = 100% 6/18 = 33% 16/17 = 94%
INDO-PACIFIC AUSTRALIAN AUSTRO-TAI	17/50 = 34% 0/24 = 0% 43/67 = 64% 1/5 = 20%	0/50 = 0% 0/24 = 0% 1/67 = 1% 0/5 = 0%	50/50 = 100% 24/24 = 100% 67/67 = 100% 5/5 = 100%	19/50 = 38% $24/24 = 100%$ $60/67 = 90%$ $5/5 = 100%$	34/50 = 68% 24/24 = 100% 48/67 = 72% 2/5 = 40%
ESKIMO-ALEUT NA-DENE MACRO-ALGONQUIAN SALISH WAKASHAN	11/12 = 92% 11/13 = 85% 10/10 = 100% 2/2 = 100%	0/12 = 0% $0/13 = 0%$ $0/13 = 0%$ $2/10 = 20%$ $1/2 = 50%$	12/12 = 100% $13/13 = 100%$ $8/10 = 80%$ $2/2 = 100%$	12/12 = 100% $12/12 = 100%$ $6/13 = 46%$ $10/10 = 100%$ $2/2 = 100%$	2/12 = 17% $2/13 = 15%$ $2/10 = 20%$ $0/2 = 0%$
MACRO-SIOUAN PENUTIAN HOKAN AZTEC-TANOAN	11/12 = 92% 32/43 = 74% 13/19 = 68% 14/15 = 93%	0/12 = 0% $0/43 = 0%$ $1/19 = 5%$ $0/15 = 0%$	$ \begin{array}{r} 12/12 &= 100\% \\ 12/12 &= 100\% \\ 43/43 &= 100\% \\ 19/19 &= 100\% \\ 15/15 &= 100\% \end{array} $	4/12 = 33% 42/43 = 98% 18/19 = 95% 10/15 = 67%	3/12 = 25% $24/43 = 56%$ $10/19 = 53%$ $8/15 = 53%$
OTO-MANGUEAN MACRO-CHIBCHAN GE-PANO-CARIB ANDEAN-EQUATORIAL	12/14 = 86% 9/10 = 90% 18/24 = 75% 31/39 = 79%	0/14 = 0% $0/10 = 0%$ $1/24 = 4%$ $0/39 = 0%$	14/14 = 100% 9/10 = 90% 24/24 = 100% 39/39 = 100%	14/14 = 100% 6/10 = 60% 2/24 = 8% 14/39 = 36%	12/14 = 86% 8/10 = 80% 20/24 = 83% 33/39 = 85%
TOTAL	445/693 = 64%	48/693 = 7%	690/693 = 100%	566/693 = 82%	536/693 = 77%

	Liquids	Both Laterals and Vibrants	Long Consonants	Retroflex Consonants	Clicks
AFRO-ASIATIC	29/29 = 100%	29/29 = 100%	16/29 = 55%	3/29 = 10%	0/29 = 0%
NIGER-KORDOFANIAN	50/51 = 98%	31/51 = 61%	4/51 = 8%	4/51 = 8%	1/51 = 2%
NILO-SAHARAN	25/25 = 100%	25/25 = 100%	9/25 = 36%	8/25 = 32%	0/25 = 0%
KHOISAN	4/4 = 100%	1/4 = 25%	0/4 = 0%	1/4 = 25%	4/4 = 100%
INDO-EUROPEAN	73/73 = 100%	71/73 = 97%	8/73 = 11%	19/73 = 26%	0/73 = 0%
CAUCASIAN	37/37 = 100%	37/37 = 100%	17/37 = 46%	0/37 = 0%	0/37 = 0%
URALIC	23/23 = 100%	23/23 = 100%	12/23 = 52%	2/23 = 9%	0/23 = 0%
ALTAIC	39/39 = 100%	36/39 = 92%	5/39 = 13%	0/39 = 0%	0/39 = 0%
PALEOSIBERIAN	8/8 = 100%	6/8 = 75%	5/8 = 62%	0/8 = 0%	0/8 = 0%
DRAVIDIAN	10/10 = 100%	10/10 = 100%	3/10 = 30%	9/10 = 90%	0/10 = 0%
SINO-TIBETAN	18/18 = 100%	5/18 = 28%	0/18 = 0%	3/18 = 17%	0/18 = 0%
AUSTRO-ASIATIC	17/17 = 100%	16/17 = 94%	0/17 = 0%	8/17 = 47%	0/17 = 0%
INDO-PACIFIC	42/50 = 84%	11/50 = 22%	0/50 = 0%	3/50 = 6%	0/50 = 0%
AUSTRALIAN	24/24 = 100%	24/24 = 100%	1/24 = 4%	19/24 = 79%	0/24 = 0%
AUSTRO-TAI	67/67 = 100%	41/67 = 61%	6/67 = 9%	10/67 = 15%	0/67 = 0%
ESKIMO-ALEUT	5/5 = 100%	2/5 = 40%	2/5 = 40%	0/5 = 0%	0/5 = 0%
NA-DENE	12/12 = 100%	2/12 = 17%	0/12 = 0%	1/12 = 8%	0/12 = 0%
MACRO-ALGONQUIAN	6/13 = 46%	2/13 = 15%	3/13 = 23%	2/13 = 15%	0/13 = 0%
SALISH	10/10 = 100%	2/10 = 20%	0/10 = 0%	0/10 = 0%	0/10 = 0%
WAKASHAN	2/2 = 100%	0/2 = 0%	0/2 = 0%	0/2 = 0%	0/2 = 0%
MACRO-SIOUAN	7/12 = 58%	0/12 = 0%	0/12 = 0%	0/12 = 0%	0/12 = 0%
PENUTIAN	42/43 = 98%	24/43 = 56%	3/43 = 7%	9/43 = 21%	0/43 = 0%
HOKAN	19/19 = 100%	9/19 = 47%	0/19 = 0%	4/19 = 21%	0/19 = 0%
AZTEC-TANOAN	13/15 = 87%	5/15 = 33%	2/15 = 13%	4/15 = 27%	0/15 = 0%
OTO-MANGUEAN	14/14 = 100%	12/14 = 86%	0/14 = 0%	3/14 = 21%	0/14 = 0%
MACRO-CHIBCHAN	9/10 = 90%	5/10 = 50%	0/10 = 0%	2/10 = 20%	0/10 = 0%
GE-PANO-CARIB	22/24 = 92%	1/24 = 4%	0/24 = 0%	8/24 = 33%	0/24 = 0%
ANDEAN-EQUATORIAL	34/39 = 87%	13/39 = 33%	1/39=3%	9/39 = 23%	0/39 = 0%
TOTAL	$\overline{661/693 = 95\%}$	$\overline{443/693 = 64\%}$	97/693 = 14%	$131/\overline{693} = 19\%$	5/693 = 1%

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AFRO-ASIATIC	6/29 = 21%	12/29 = 41%	6/29 = 21%	7/29 = 24%	3/29 = 10%	
NIGER-KORDOFANIAN	1/51 = 2%	15/51 = 29%	10/51 = 20%	2/51 = 4%	0/51 = 0%	
NILO-SAHARAN	2/25 = 8%	11/25 = 44%	4/25 = 16%	2/25 = 8%	0/25 = 0%	
KHOISAN	2/4 = 50%	0/4 = 0%	1/4 = 25%	1/4 = 25%	0/4 = 0%	
INDO-EUROPEAN	1/73 = 1%	1/73 = 1%	18/73 = 25%	5/73 = 7%	3/73 = 4%	
CAUCASIAN	37/37 = 100%	1/37 = 3%	11/37 = 30%	0/37 = 0%	0/37 = 0%	
URALIC	0/23 = 0%	0/23 = 0%	1/23 = 4%	1/23 = 4%	0/23 = 0%	
ALTAIC	1/39 = 3%	0/39 = 0%	2/39 = 5%	2/39 = 5%	0/39 = 0%	
PALEOSIBERIAN	1/8 = 12%	0/8 0%	0/8 = 0%	2/8 = 25%	0/8 = 0%	
DRAVIDIAN	0/10 = 0%	0/10 = 0%	9/10 = 90%	1/10 = 10%	0/10 = 0%	
SINO-TIBETAN	0/18 = 0%	0/18 = 0%	3/18 = 17%	1/18 = 6%	0/18 = 0%	
AUSTRO-ASIATIC	0/17 = 0%	4/17 = 24%	6/17 = 35%	2/17 = 12%	0/17 = 0%	
INDO-PACIFIC	2/50 = 4%	1/50 = 2%	23/50 = 46%	8/50 = 16%	3/50 = 6%	
AUSTRALIAN	0/24 = 0%	0/24 = 0%	5/24 = 21%	0/24 = 0%	13/24 = 54%	
AUSTRO-TAI	1/67 = 1%	4/67 = 6%	29/67 = 43%	3/67 = 4%	1/67 = 1%	
ESKIMO-ALEUT	1/5 = 20%	0/5 = 0%	0/5 = 0%	0/5 = 0%	4/5 = 80%	
NA-DENE	12/12 = 100%	0/12 = 0%	2/12 = 17%	0/12 = 0%	2/12 = 17%	
MACRO-ALGONQUIAN	0/13 = 0%	0/13 = 0%	2/13 = 15%	1/13 = 8%	1/13 = 8%	
SALISH	10/10 = 100%	0/10 = 0%	0/10 = 0%	0/10 = 0%	2/10 = 20%	
WAKASHAN	2/2 = 100%	0/2 = 0%	0/2 = 0%	1/2 = 50%	0/2 = 0%	
MACRO-SIOUAN	3/12 = 25%	0/12 = 0%	4/12 = 33%	1/12 = 8%	0/12 = 0%	
PENUTIAN	31/43 = 72%	14/43 = 33%	22/43 = 51%	4/43 = 9%	3/43 = 7%	
HOKAN	7/19 = 37%	0/19 = 0%	11/19 = 58%	2/19 = 11%	1/19 = 5%	
AZTEC-TANOAN	2/15 = 13%	0/15 = 0%	3/15 = 20%	1/15 = 7%	0/15 = 0%	
OTO-MANGUEAN	1/14 = 7%	1/14 = 7%	4/14 = 29%	0/14 = 0%	0/14 = 0%	
MACRO-CHIBCHAN	2/10 = 20%	1/10 = 10%	2/10 = 20%	0/10 = 0%	0/10 = 0%	
GE-PANO-CARIB	1/24 = 4%	1/24 = 4%	1/24 = 4%	0/24 = 0%	0/24 = 0%	
ANDEAN-EQUATORIAL	3/39 = 8%	2/39 = 5%	8/39 = 21%	0/39 = 0%	4/39 = 10%	
TOTAL	129/693 = 19%	68/693 = 10%	187/693 = 27%	47/693 = 7%	40/693 = 6%	

	i u e o € ⊃ a	Front Rounded Vowels	Back Unrounded Vowels	Nasal Vowels	Long Vowels
AFRO-ASIATIC NIGER-KORDOFANIAN NILO-SAHARAN KHOISAN	1/29 = 3% $21/51 = 41%$ $5/25 = 20%$ $1/4 = 25%$	0/29 = 0% 3/51 = 6% 0/25 = 0% 0/4 = 0%	0/29 = 0% 1/51 = 2% 1/25 = 4% 0/4 = 0%	0/29 = 0% 27/51 = 53% 1/25 = 4% 4/4 = 100%	17/29 = 59% $24/51 = 47%$ $12/25 = 48%$ $2/4 = 50%$
INDO-EUROPEAN CAUCASIAN URALIC	7/73 = 10% 0/37 = 0% 0/23 = 0%	15/73 = 21% 12/37 = 32% 13/23 = 57%	0/73 = 0% 1/37 = 3% 5/23 = 22%	$ \begin{array}{r} 19/73 = 26\% \\ 14/37 = 38\% \\ 0/23 = 0\% \end{array} $	33/73 = 45% $15/37 = 41%$ $13/23 = 57%$
ALTAIC PALEOSIBERIAN DRAVIDIAN SINO-TIBETAN	0/39 = 0% 0/8 = 0% 0/10 = 0% 1/18 = 6% 1/17 = 6%	25/39 = 64% $0/8 = 0%$ $0/10 = 0%$ $7/18 = 39%$ $0/17 = 0%$	21/39 = 54% $0/8 = 0%$ $0/10 = 0%$ $5/18 = 28%$ $2/17 = 12%$	1/39 = 3% $0/8 = 0%$ $2/10 = 20%$ $3/18 = 17%$ $6/17 = 35%$	23/39 = 59% $4/8 = 50%$ $10/10 = 100%$ $5/18 = 28%$ $7/17 = 41%$
AUSTRO-ASIATIC INDO-PACIFIC AUSTRALIAN AUSTRO-TAI	0/50 = 0% $0/24 = 0%$ $2/67 = 3%$	$ \begin{array}{r} 1/50 = 2\% \\ 0/24 = 0\% \\ 3/67 = 4\% \end{array} $	0/50 = 0% $0/24 = 0%$ $5/67 = 7%$	2/50 = 4% 0/24 = 0% 2/67 = 3%	14/50 = 28% $9/24 = 37%$ $38/67 = 57%$
ESKIMO-ALEUT NA-DENE MACRO-ALGONQUIAN SALISH	0/5 = 0% 0/12 = 0% 1/13 = 8% 0/10 = 0%	0/5 = 0% 0/12 = 0% 0/13 = 0% 0/10 = 0%	0/5 = 0% 0/12 = 0% 1/13 = 8% 0/10 = 0%	0/5 = 0% $8/12 = 67%$ $2/13 = 15%$ $0/10 = 0%$	3/5 = 60% $9/12 = 75%$ $11/13 = 85%$ $3/10 = 30%$
WAKASHAN MACRO-SIOUAN PENUTIAN HOKAN	0/2 = 0% 0/12 = 0% 0/43 = 0% 0/19 = 0%	0/2 = 0% $0/12 = 0%$ $0/43 = 0%$ $0/19 = 0%$	0/2 = 0% $0/12 = 0%$ $3/43 = 7%$ $0/19 = 0%$	0/2 = 0% $8/12 = 67%$ $0/43 = 0%$ $1/19 = 5%$	$ \begin{array}{r} 1/2 = 50\% \\ 8/12 = 67\% \\ 26/43 = 60\% \\ 15/19 = 79\% \\ \end{array} $
AZTEC-TANOAN OTO-MANGUEAN	0/15 = 0% $1/14 = 7%$ $0/10 = 0%$	$ \begin{array}{r} 1/15 = 7\% \\ 0/14 = 0\% \\ 0/10 = 0\% \end{array} $	3/15 = 20% 3/14 = 21% 0/10 = 0%	3/15 = 20% $13/14 = 93%$ $6/10 = 60%$	$ \begin{array}{r} 11/15 = 73\% \\ 3/14 = 21\% \\ 0/10 = 0\% \end{array} $
MACRO-CHIBCHAN GE-PANO-CARIB ANDEAN-EQUATORIAL	0/10 = 0% $0/24 = 0%$ $0/39 = 0%$	0/10 = 0% 0/24 = 0% 0/39 = 0%	$ \begin{array}{r} 0.76 - 0.0 \\ 10/24 = 42\% \\ 5/39 = 13\% \end{array} $	$9/24 = 37\% \\ 23/39 = 59\%$	6/24 = 25% $13/39 = 33%$
TOTAL	41/693 = 6%	80/693 = 12%	66/693 = 10%	$\overline{154/693} = 22\%$	335/693 = 48%

		Vowel					
	Tone	Harmony	SOV	SVO	VSO	NA	AN
AFRO-ASIATIC	11/29 = 38%	3/29 = 10%	10	10	5	18	6
NIGER-KORDOFANIAN	41/51 = 80%	12/51 = 24%	2	29	0	23	5
NILO-SAHARAN	20/25 = 80%	9/25 = 36%	9	9	5	24	0
KHOISAN	4/4 = 100%	0/4 = 0%	1	2	0	1	1
INDO-EUROPEAN	7/73 = 10%	1/73 = 1%	24	34	3	22	37
CAUCASIAN	0/37 = 0%	3/37 = 8%	16	11	0	1	25
URALIC	0/23 = 0%	15/23 65%	14	6	0	0	21
ALTAIC	2/39 = 5%	31/39 = 79%	38	1	0	0	39
PALEOSIBERIAN	0/8 = 0%	1/8 = 12%	8	0	0	0	8
DRAVIDIAN	0/10 = 0%	0/10 = 0%	10	0	0	0	10
SINO-TIBETAN	17/18 = 94%	0/18 = 0%	6	8	0	5	7
AUSTRO-ASIATIC	3/17 = 18%	1/17 = 6%	1	5	0	5	1
INDO-PACIFIC	14/50 = 28%	1/50 = 2%	26	1	0	14	3
AUSTRALIAN	0/24 = 0%	0/24 = 0%	24	0	0	23	0
AUSTRO-TAI	7/67 = 10%	1/67 = 1%	0	16	16	27	4
ESKIMO-ALEUT,	0/5 = 0%	0/5 = 0%	0	4	0	3	0
NA-DENE	7/12 = 58%	0/12 = 0%	2	0	0	1	1
MACRO-ALGONQUIAN	1/13 = 8%	0/13 = 0%	1	3	0	2	1
SALISH	0/10 = 0%	0/10 = 0%	0	0	2	0	0
WAKASHAN	0/2 = 0%	0/2 = 0%	0	0	0	0	0
MACRO-SIOUAN	1/12 = 8%	0/12 = 0%	2	0	0	2	0
PENUTIAN	1/43 = 2%	2/43 = 5%	3	5	3	3	14
HOKAN	2/19 = 11%	0/19 = 0%	0	0	0	0	0
AZTEC-TANOAN	4/15 = 27%	0/15 = 0%	2	2	0	1	2
OTO-MANGUEAN	12/14 = 86%	1/14 = 7%	0	1	6	7	1
MACRO-CHIBCHAN	1/10 = 10%	1/10 = 10%	4	1	1	4	1
GE-PANO-CARIB	4/24 = 17%	1/24 = 4%	4	0	0	4	1
ANDEAN-EQUATORIAL	5/39 = 13%	1/39 = 3%	3	4	3	4	5
TOTAL	$\overline{164/693} = 24\%$	84/693 = 12% 2	10/406 = 529	$\sqrt{6} \ \frac{152/406}{152} = 37\%$	44/406 = 11%	194/387 = 50%	193/387 = 50%